

FLIGHT

The
AIRCRAFT
ENGINEER
to
AIRSHIPS

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

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EDITORIAL COMMENT.



If one were asked to state briefly the outstanding feature of the Third International Aero Show now being held in the Palace of Industry at Prague, it seems likely that the reply would be: The number and quality of Czechoslovak aeroplanes. In this respect the Show has provided a surprise. We frankly admit to this feeling ourselves, and this in spite of the fact that we had thought we were fairly well posted on Czechoslovak aviation matters. Yet we had not realised the great progress made in a few short years by the youngest Republic. That one Prague firm should be able to show no less than 11 machines, of something like eight different types, affords proof of the determination and enterprise of a nation at last liberated from centuries of suppression, and augurs well for the future of the Czechoslovak Republic under the wise and firm guidance of its first President, Prof. Masaryk. The Republic is making great strides, not only in aviation matters, but also in industry and commerce generally, although it is naturally with the first-mentioned phase that we are mainly concerned.

Although we have from time to time published in FLIGHT articles dealing with Czechoslovak aviation developments, we think a few general remarks on the present position and a very brief indication of the plans for the future, such as we have been able to ascertain and interpret them, may be of assistance. Taking the subject of air lines first, Prague is already linked by air to Paris, Warsaw, and Bucharest. As soon as German opposition can be overcome Prague will be in aerial communication with London. Air connections with Berlin and Vienna were inaugurated recently, and there is a line from Prague to Bratislava, which is to be extended to Kosice. In this connection it would appear advisable for British industry to appoint direct representatives for Czechoslovakia, resident in Prague. The importance of direct representation has been stressed in the recent report of the British Commercial Attaché to His Majesty's Legation in Prague, and is not, perhaps, as fully realised in this

DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:—

- 1924
- May 31–June 9 Third Czecho-Slovak International Aeronautical Exhibition, Prague
- June 15 Gordon Bennett Balloon Race, Belgium
- „ 21 F.A.I. Conference Opens, Paris
- „ 24 Independent Force (R.A.F.) 6th Annual Reunion Dinner at R.A.F. Club
- „ 25 R.N.A.S. and 5th Group, R.A.F., annual dinner
- „ 28 Royal Air Force Pageant, Hendon
- July 24–Aug. 10 Tour de France for Light 'Planes
- July 26 King's Cup Race
- Aug. 4 Aerial Derby at Lympe
- „ 4 Holiday Light Aeroplane Handicap at Lympe
- Sept. 8–13 Light 'Plane Competitions at Lympe
- Oct. 2 Aero Golfing Society. Autumn Meeting, at Moor Park Golf Club, for A.G.S. Challenge Cup presented by Cellon (Richmond) Ltd.

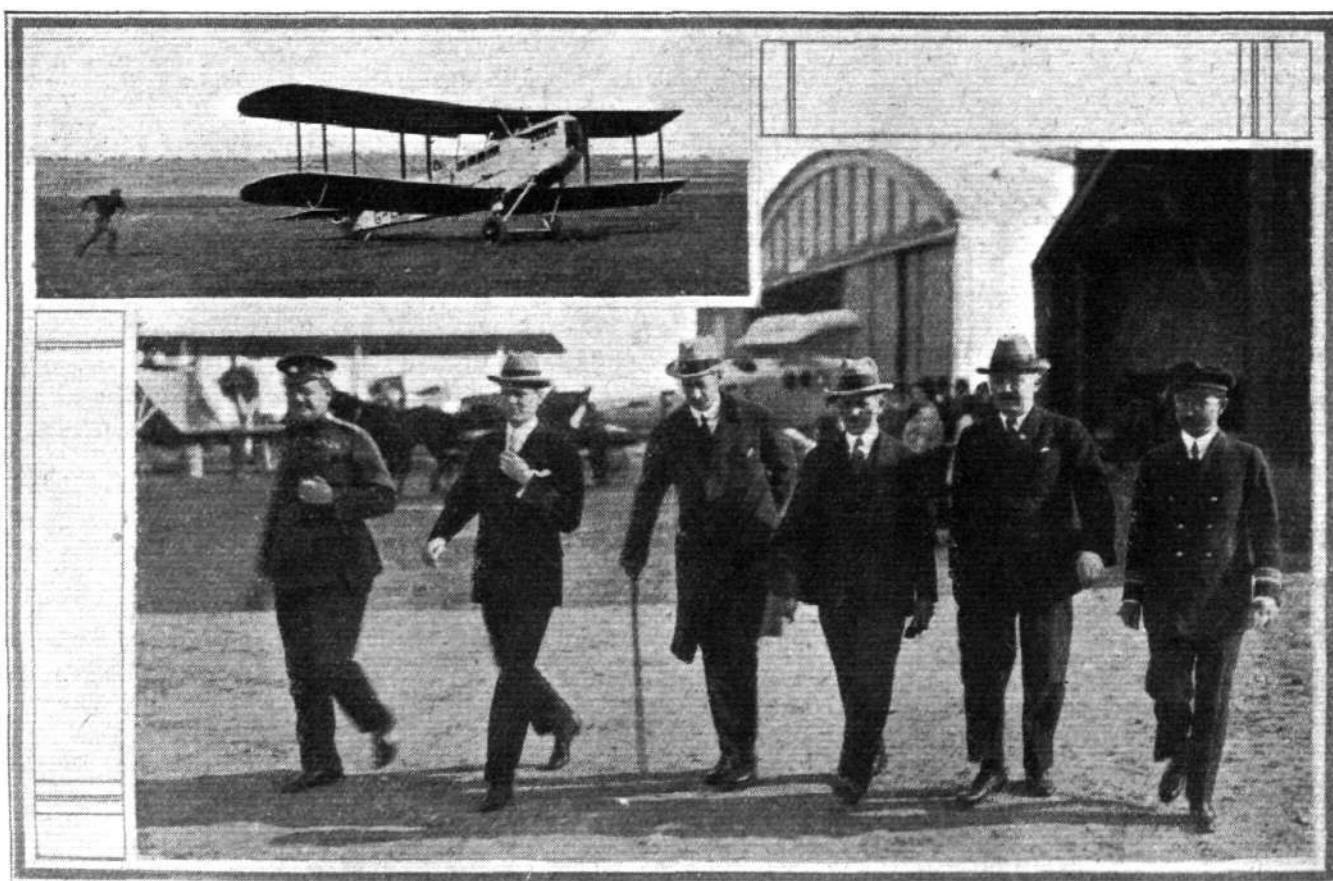
country as it might be. There seems to be a tendency to think that sufficient has been done if a representative is appointed to Vienna for all Central European countries. One result is that the Czechs are often buying German and French products when they might be buying British.

To what extent Czechoslovakia realises the importance of air transport and aviation matters generally may be seen from the fact that the Government intends to appoint this year a special Air Attaché in Paris, who will be accredited not only to France, but to Great Britain, Belgium, and Switzerland as well. The establishment of a regular air route between Prague and London would be of very great benefit, and no effort should be spared to persuade the German Government to give its consent. The splendid flight of the D.H. 50, with Lord Thomson and Gen. Sir Sefton Brancker on board, created a very good impression in Prague, and must have done much to bring home to the Czechs the reliability of British commercial aircraft, thus further enhancing British prestige in that country.

In a statement since made, Sir Sefton pointed out that the actual flying time taken on the way to Prague was 6 hours 20 minutes, a stop having been made at Cologne *en route* to see the review. The homeward journey, against a strong wind, took 9 hours, both journeys being uneventful. The Director of Civil Aviation also stated, with reference to British participation in the Prague Show, that the estimated cost was £12,000, of which the Air Ministry had agreed to pay half. He thought, and we fully agree, that the money was being well spent in British interests, and we think the Show will prove to have been worth while, especially from the point of view of engine manufacturers. Our exhibit of aeroplanes

certainly lacked something in quantity, and, although no one will deny the quality of the three British machines staged, personally we think it will be in the sale of British aero engines that the greatest immediate benefit to British industry will be found, and visitors to the Palace of Industry were much impressed by the refinement and excellence of design and workmanship to be found in all the British engines.

As regards the machines at Prague, it seems to us that the position may be summed up by saying that, as already mentioned, the Czech exhibits provided the surprise. Neither England, France nor Germany show anything startlingly new, although the general quality is fairly high. It is a matter for regret that some British commercial aeroplanes were not exhibited, but, even so, the flight by the D.H.50 will have done much to make up for any shortcomings in this direction. There is little doubt that when the time comes for the London-Prague air line to be opened British commercial machines will be favoured and will need fear no comparison with those of other nations. We may be somewhat behind in the matter of fast fighting machines, but as regards commercial aircraft we have probably advanced farther than has any other nation. Taking it all round, we think it may be said that from a British viewpoint the Prague Show has been a success. In this connection we should like to take this opportunity to thank all those who have written to express their appreciation of the good work done by FLIGHT in producing the special British Aircraft Industry issue of May 29. These expressions of appreciation more than repay us for the work and expense involved in producing the number, and we are glad to know that our efforts are so generally appreciated.



BRITAIN'S AIR MINISTER AT PRAGUE : Our photograph shows Lord Thomson with several notabilities who met him on his arrival at the Kbely aerodrome. Inset shows the D.H.50 landing on the Prague aerodrome, carrying Lord Thomson, General Sir Sefton Brancker, and Mr. Frank Hodges. The flight from Croydon to Prague was accomplished in a little under nine hours.



FLYING TO PRAGUE : On Friday, May 30, Lord Thomson, Secretary of State for Air, General Sir Sefton Brancker, and Mr. Frank Hodges made the flight from London to Prague in a D.H. 50 (240 Siddeley-Puma), piloted by Captain Broad. Leaving Croydon at 7.30 a.m., the party arrived on the Kbely aerodrome at Prague at 4.40 p.m. Mr. Hodges was on his way to Vienna, while Lord Thomson and General Sir Sefton Brancker were attending the opening by Professor Masaryk, President of the Czechoslovak Republic, of the Third International Aero Exhibition in Prague. Our photograph shows the three air travellers in merry mood a moment before the departure. Above the luggage is being loaded on board, while below the D.H. 50 is seen actually starting on its splendid flight.

A NEW "SUPERMARINE" FOR SPAIN

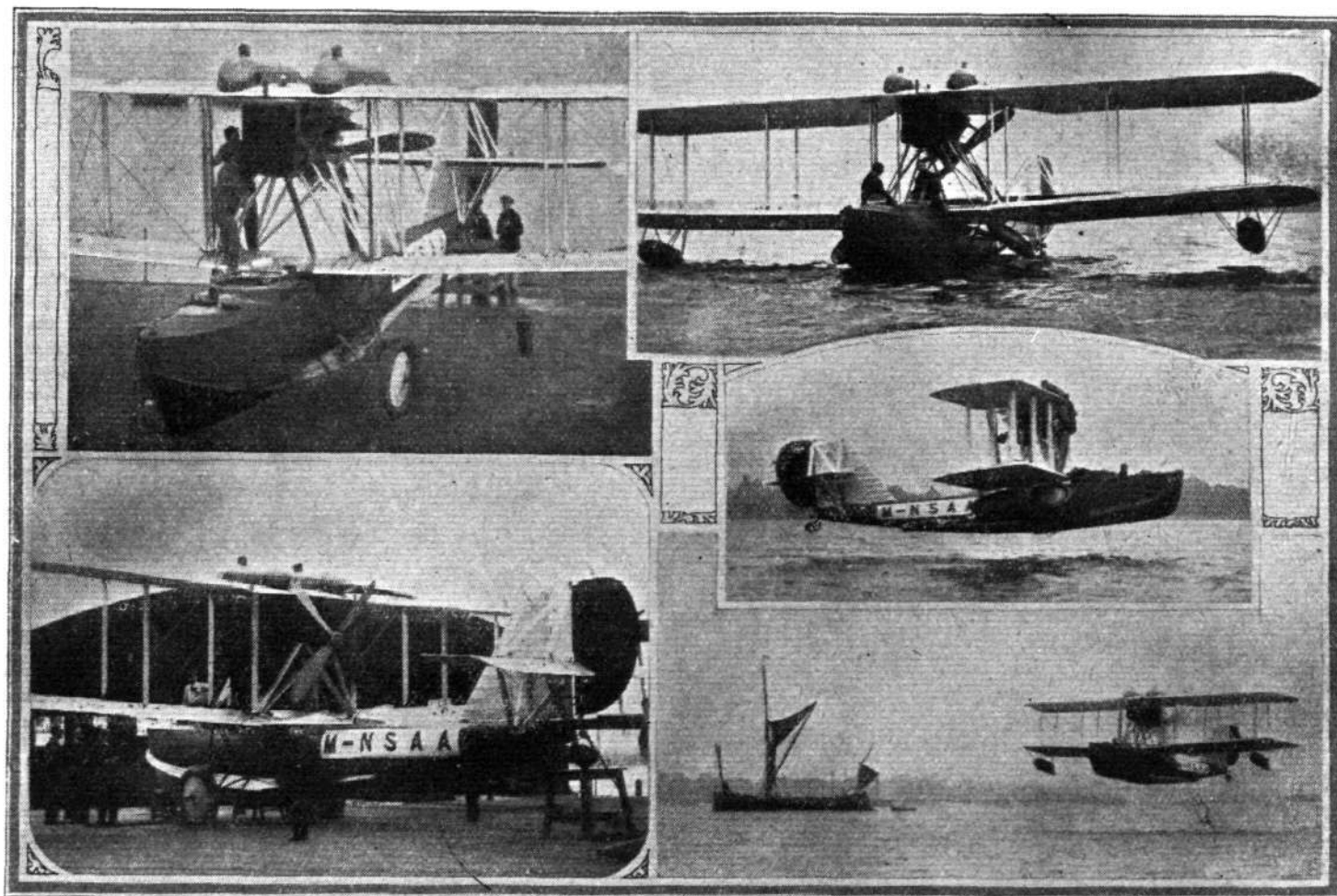
Bombing Machine Passes its Tests

THAT the merits of Supermarine flying boats are appreciated also outside the British Empire is amply proved by the number that has been in service in some of the remotest corners of the world. Everywhere one hears good reports of these seaworthy flying boats, and quite recently a large order was, we understand, received from a foreign government much nearer home. Spain is on the look-out for suitable machines to employ along her long coast line, and it is not strange that, after thorough investigations and the witnessing of flying tests, the order to which we have referred was placed with the Supermarine Aviation Works of Southampton. Naturally, one is not at liberty to go into too minute detail, but it may be stated that the machines ordered are to be used as bombers, although they also carry photographic outfits.

The new Supermarine, of which the first was tested over

flight was carried out with full load, and the machine then returned to Woolston, to the Supermarine Works, where the Spanish officials were disembarked—or should one say "disemplaned"? The machine was then flown to Worthy Down aerodrome, where permission to land had been obtained. The landing was accomplished very successfully in the presence of a large number of Royal Air Force officers and Spanish officials, who had come over by road to watch the landing. Two members of the Greek Commission were also present, having come over specially to witness the trials.

Flying-Officer Paul Smith, one of the test pilots from Felixstowe Air Station, was present on behalf of the Air Ministry Airworthiness Department, and after checking all weights, etc., he took the machine off after a very short run and proceeded to Southampton. Later on the same pilot



A NEW SUPERMARINE AMPHIBIAN FOR SPAIN: The engine is a Rolls-Royce "Eagle IX." The machine carries pilot, gunner, and observer forward. A camera is fixed in the interior of the hull, where also bombs are carried.

Southampton Water by Capt. Biard on May 21, is of the amphibian type, and is fitted with Rolls-Royce "Eagle IX" engine, driving a "pusher" airscrew. Pilot, gunner and observer are all placed forward, where the view is excellent. The hull is of normal Supermarine form, with two built-in steps, and shows the high bows, with nearly vertical stem, which has lately been employed, notably in the commercial flying boat, the "Sea Eagle," although the Spanish machine naturally is not provided with the enclosed cabin found on the commercial type. The two petrol tanks are placed above the top centre section, so that direct gravity feed from either or both tanks can be provided. The bombs are carried in the interior of the hull, the space made available by placing the tanks on the top plane being available for this purpose.

As already mentioned, the first flight test took place on May 21. Further official trials were carried out on May 27 before the Spanish officials concerned. The preliminary test

took the machine up for sea trials, and expressed himself satisfied with its behaviour.

Later in the day Capt. Biard took out the machine, accompanied by two Spanish officers. This time the object of the test was to try the seaworthiness of the machine. Capt. Biard flew round to the Needles and alighted there in a fairly rough sea. The machine alighted smoothly and got off again without trouble, and was then taken up to her service ceiling, which she reached after a very good climb. She was then given her speed tests, and the trials were considered satisfactory, the machine then being taken over by the Spanish authorities.

Considering that the machine is the first of a new type, and that not a single change or alteration was found to be required, these tests are highly creditable to the Supermarine Aviation Works, and especially to their chief designer, Mr. R. J. Mitchell.

COMMERCIAL AVIATION IN AUSTRALIA

THE aerial mail and passenger service which has been operating in Western Australia for over two years was recently extended to link up with the city of Perth, involving an additional mileage of approximately 500 miles per week, making a weekly total flown by the machines of the Western Australian Airways, Ltd., approximately 2,900 miles. During the recent summer months, no interruptions to the service were necessary on account of "willi willies" (serious storms

ambulance to convey urgent cases to hospital, and passengers booked by air have on many occasions given up their seats to people who have had the misfortune to require urgent medical or surgical treatment which is not always available at the townships on the North-West coast.

Arrangements are now being made by the Commonwealth Government to extend this air line further North into the Kimberley district, linking up beyond the present terminus



COMMERCIAL AVIATION IN AUSTRALIA: The Western Australian Airways, Ltd., Depôt at Perth, and some of the machines—Bristol Tourers and Avro.

or typhoons, usually looked for at this time of the year, and which result in holding up shipping and involve serious destruction to life and property). Although severe gales were met with on occasions, practically the whole of the flying was carried out to schedule time and every trip was completed according to contract.

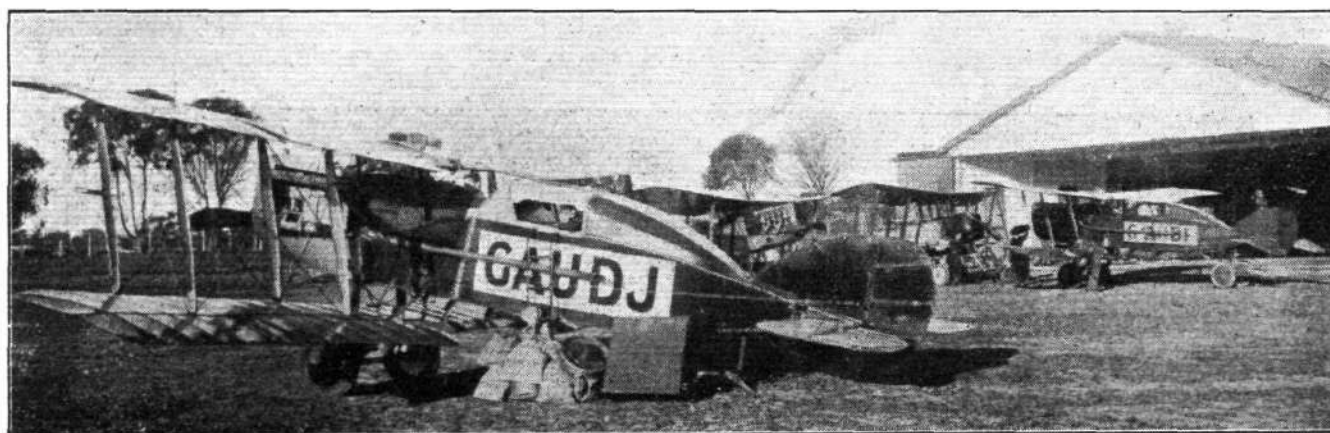
The mileage now totalled by the Company's machines is over 285,000, and the original six Bristol Tourer machines are all still in daily service, as also are the Puma-engines with which the Company has its fleet equipped.

With the extension of the service from Geraldton to Perth, a re-arrangement of time-table was made, and the first stage of the outward trip links up Perth with Carnarvon, over 500 miles distant, in the first day, and also on the return trip

at Derby, to Halls Creek and Wyndham, which will involve approximately 1,000 additional miles' flying per week. This service has been credited with being the longest regular passenger service in the world and the longest mail service in the British Empire.

It may be of interest to note, while on the subject of air services in Australia, that the Queensland and Northern Territory Aerial Services, Ltd., which company operates the air lines in Queensland (Charleville-Concurry), and the Larkin Co., which serves South Australia, have both placed orders with the De Havilland Co. for D.H.50 machines for operating the various air lines operated by these two companies.

On Monday, June 2, the long-planned Adelaide-Sydney



COMMERCIAL AVIATION IN AUSTRALIA: One of the Western Australian Airways, Ltd., Bristol Tourers (Siddeley "Puma"), just arrived at Perth with mails from the North-West. These Bristol machines have now totalled over 285,000 miles, and are still in daily service.

machines leaving Carnarvon in the morning arrive in Perth in the afternoon. This has resulted in stimulating passenger traffic between Carnarvon and Perth, and to cope with this the Company has placed an order with the De Havilland Aircraft Company for two Puma-engined machines of the D.H. 50 type, carrying pilot and four passengers.

The quantity of freight carried each week has increased to such an extent that a restriction has had to be placed upon it, and newspapers also have had to be reduced in quantities. It is looked upon as something of an event, every Thursday afternoon in Carnarvon, when residents receive that morning's paper from Perth. One of the very important developments in connection with the air service has been the carriage of sick and injured people to hospital, and on several occasions the aeroplane on arrival at Perth has been met by a city

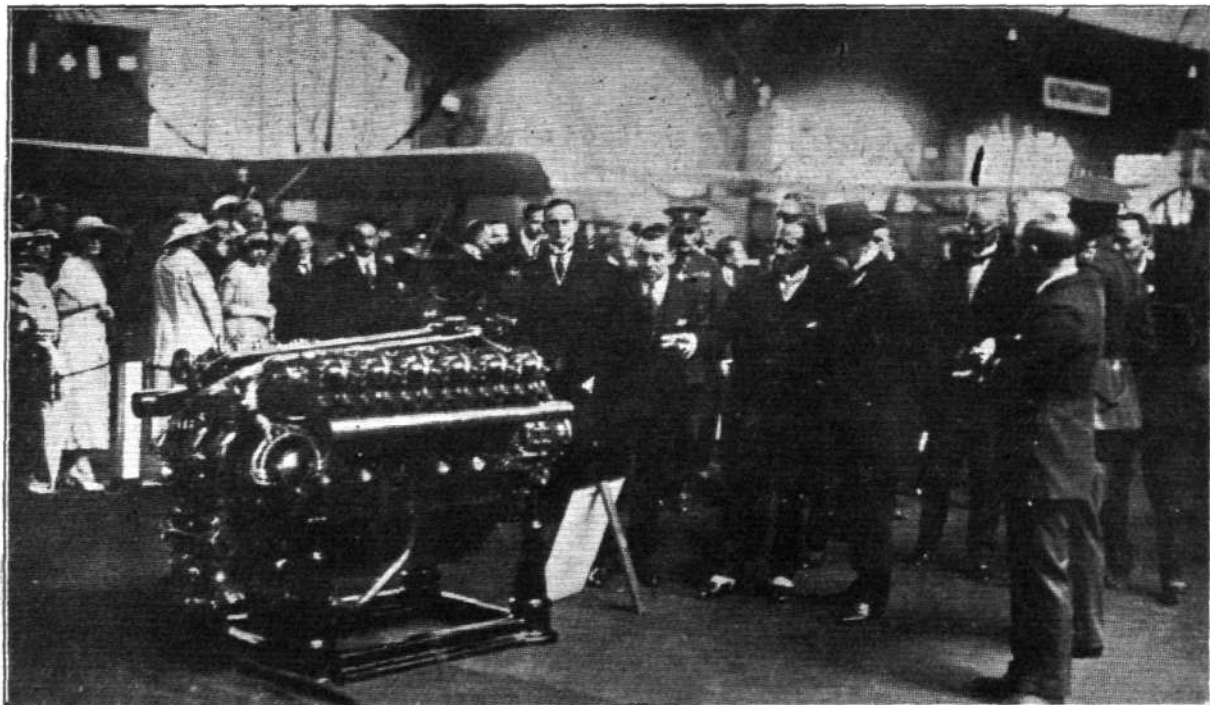
air mail service was inaugurated. It had been hoped that this service would have been in full operation long before now, but owing to some hitch as to the delivery of new machines—the Australian Aerial Mail Services, Ltd. (the "Larkin" Co.), which was to operate the services in this part of Australia, intended employing Martinsyde Commercial monoplanes—it has not been possible to make a start before now. Last Monday, however, Mr. F. L. Roberts, late of the Australian Flying Corps, left Woodville aerodrome, near Adelaide, at noon, on a Sopwith "Wallaby" with mails for Sydney. The route to be taken was via Mildura—just over 200 miles from Adelaide—where the first stop was made. Owing to rainy weather and low visibility the pilot was unable to reach Sydney according to schedule, and was forced to stay overnight at Goulburn, 100 miles from Sydney. The total distance of this service is 790 miles.

THE THIRD INTERNATIONAL - AERO SHOW AT PRAGUE -

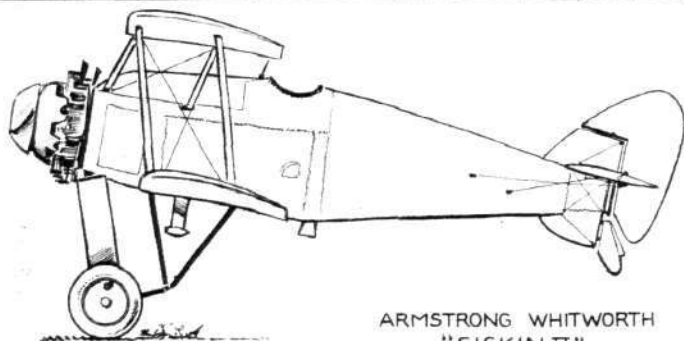
[The Third International Aero Show at Prague is by far the most important to be held in the old Czech city, and when it is remembered that the Czech Republic is but a few years old, one cannot but admire the spirit which already has placed Czechoslovakia on a firm national footing, and the determination that has enabled such progress to be made, to take but one example from the sphere of aviation, that the newest Republic has been able to exhibit at Prague aeroplanes and engines in such numbers and of such quality as to compare not unfavourably with the exhibits of countries having a start of twelve years or more. A nation that has been able to accomplish this is entitled to admiration, and is surely one destined to play an important rôle in the future of Europe. In the following notes, illustrated by sketches and photographs, will be described as many of the machines exhibited as space will allow. In certain instances it will be found that silhouettes of the exhibits of certain firms, especially French firms, are not given. This is due to the late arrival at Prague of the machines in question, which has not enabled our special representative to get particulars through in time. If it had not been for the international difficulties which have hitherto prevented the inauguration of an air service between London and Prague, we should probably have been able to give a practical demonstration of the advantage of such a service by including in this week's issue material and sketches obtained up till Monday evening. As it is, however, we have had to rely upon the older means of transport, but even so our special representative has managed to get through a very comprehensive set of silhouettes of most of the machines that had arrived up to the end of the first day of the Show. Not only by reason of the fact that the exhibition is being held in Prague, but also on account of the size and importance of the Czech exhibits, it is proposed to deal with these first. The British exhibits were referred to in last week's special issue of *FLIGHT*, and do not, therefore, appear to require further reference, except to point out their presence at the exhibition, in a very favourable position, and the fact that the British machines and engines are receiving very favourable comment on account of the general excellence of their design and construction. The British engines particularly are admired by all visitors, and we shall be surprised if considerable business does not result.]

The Third International Exhibition at Prague is being held at the permanent exhibition buildings, in the Palace of Industry, which was built in 1891. The central, and taller, portion of this building contains the machines of the Military Aircraft Works, with the other exhibits grouped around. This palace is situated in one of the bends of the river Vltava, almost due north of the city of Prague, and within easy reach. The Prague aerodrome at Kbely is some little distance out, but is also easily reached from the centre of the city.

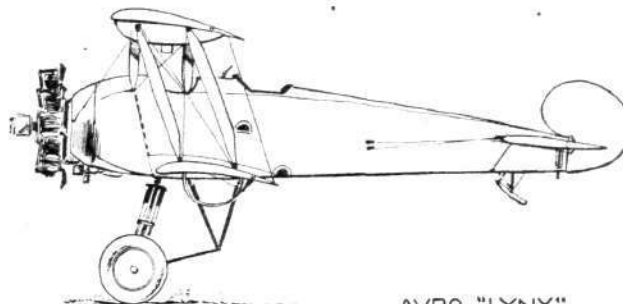
Following are general descriptions and illustrations of the machines. Next week we hope to give such constructional details, etc., as did not arrive in time for inclusion in this week's issue of *FLIGHT*.—ED.]



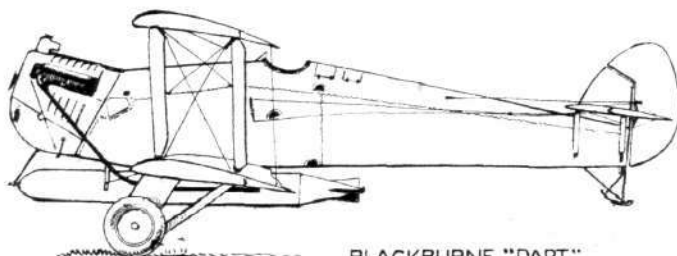
OPENING OF THE PRAGUE EXHIBITION: Our photograph, which has arrived by aeroplane from Prague, shows Professor Masaryk at the opening of the Third International Aero Show. The photograph shows General Sir Sefton Brancker, Director of Civil Aviation, explaining the Rolls-Royce "Condor" engine to the President. Behind General Brancker is Lord Thomson, Secretary of State for Air, and on his right Mr. John Lord, of A. V. Roe and Co. Behind Professor Masaryk is Sir George Russell Clarke, British Minister at Prague.



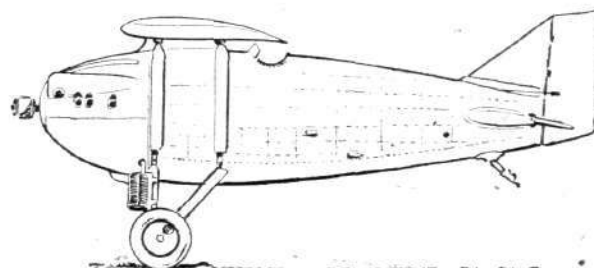
ARMSTRONG WHITWORTH
"SISKIN II"



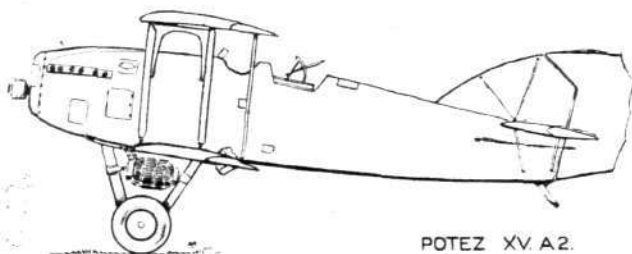
AVRO "LYNX"



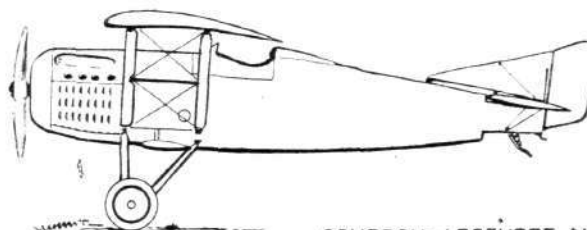
BLACKBURNE "DART"



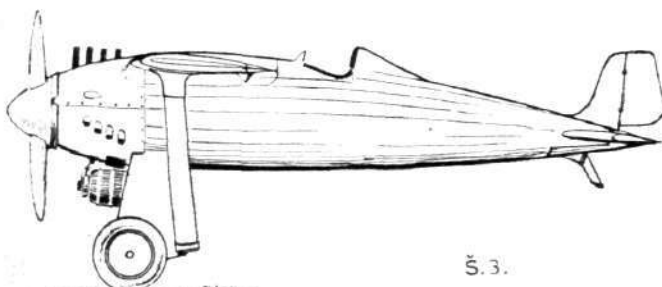
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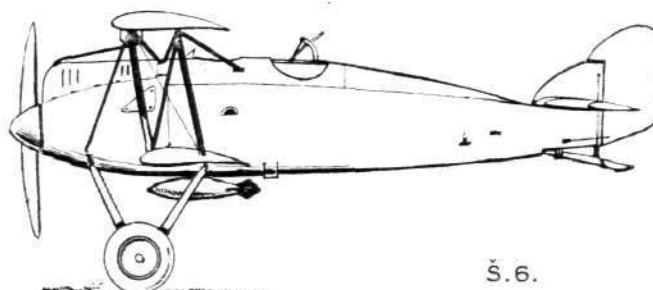
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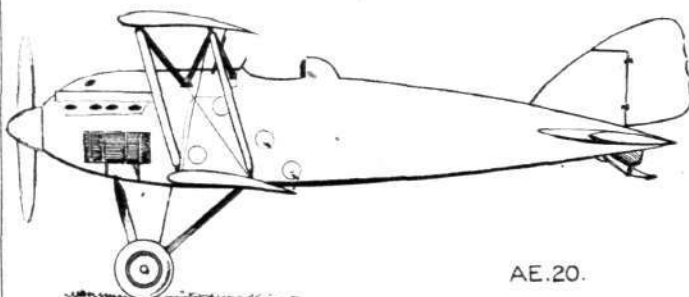
GOURDOU-LESEURRE No 40



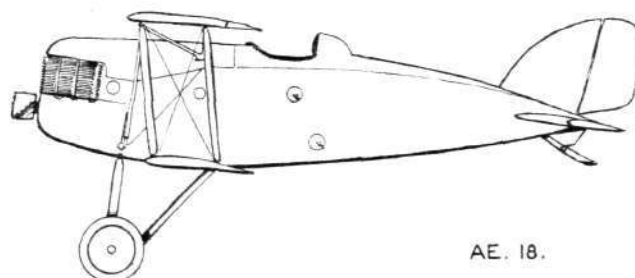
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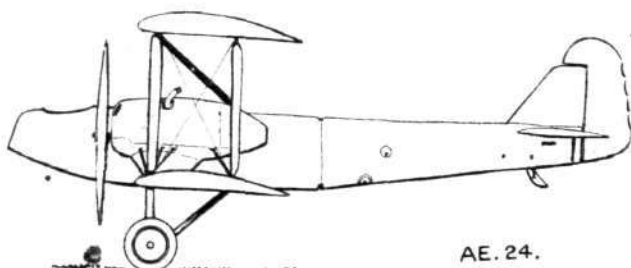
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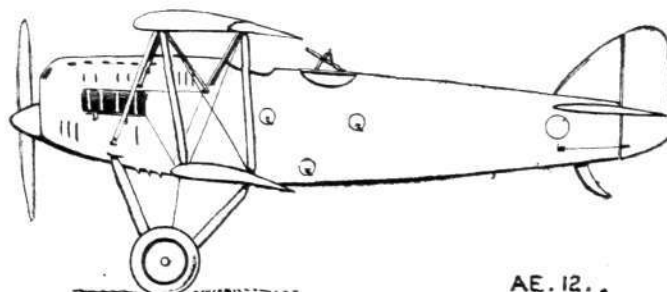
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AE. 18.

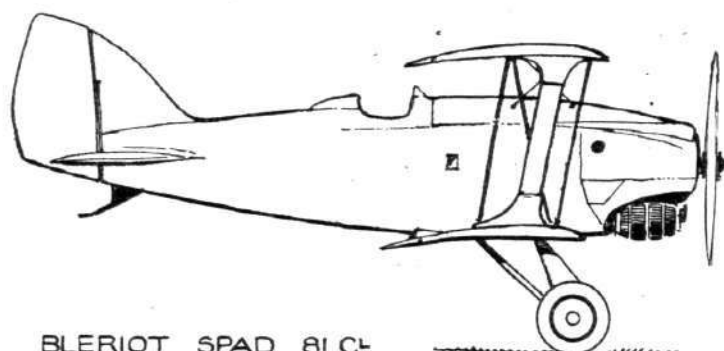


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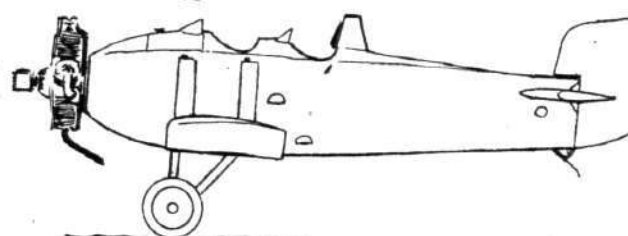


AE. 12.

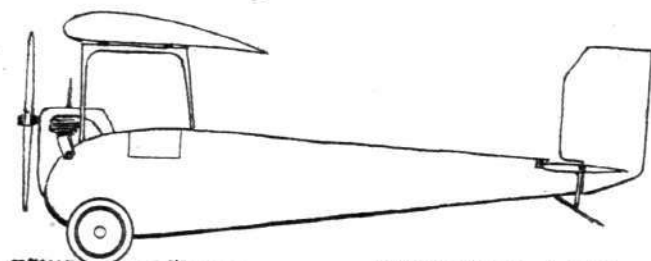
Silhouettes of some of the machines at the Prague Aero Show.



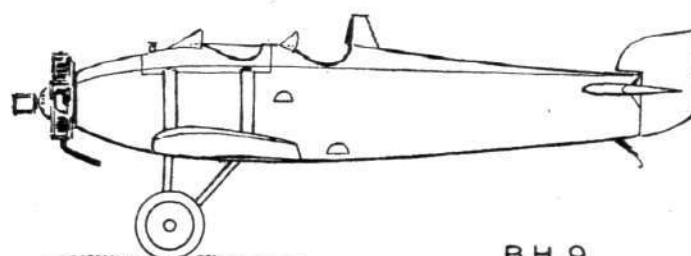
BLERIOT SPAD 81 C4



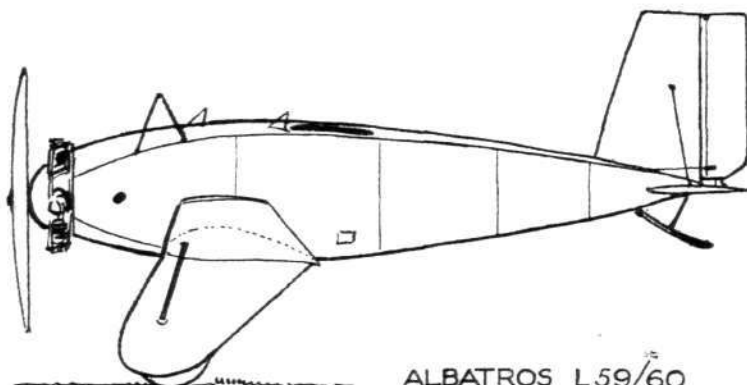
B.H. 11



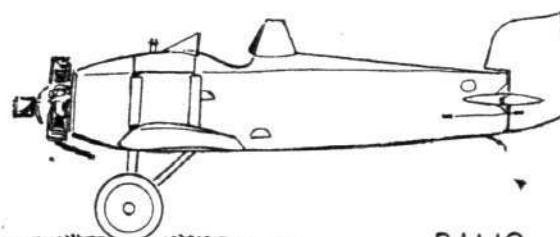
ALBATROS L 66



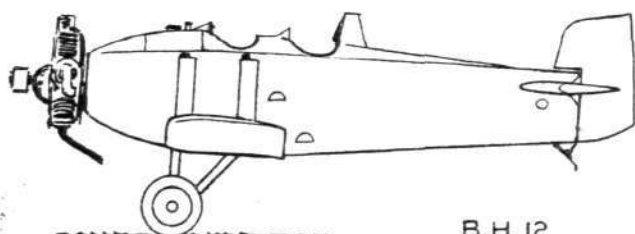
B.H. 9



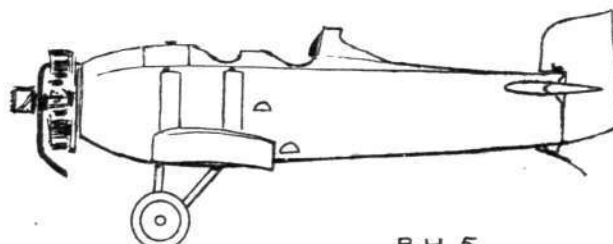
ALBATROS L 59/60



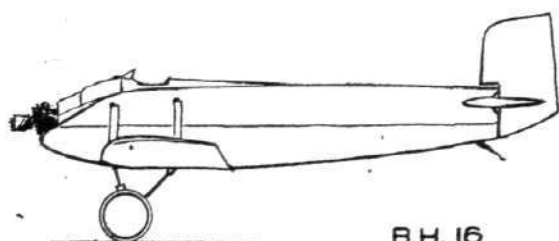
B.H. 10



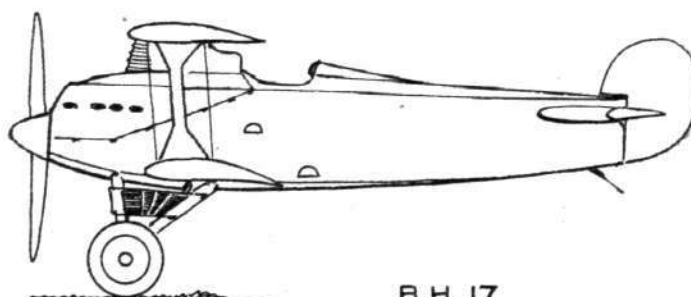
B.H. 12



B.H. 5

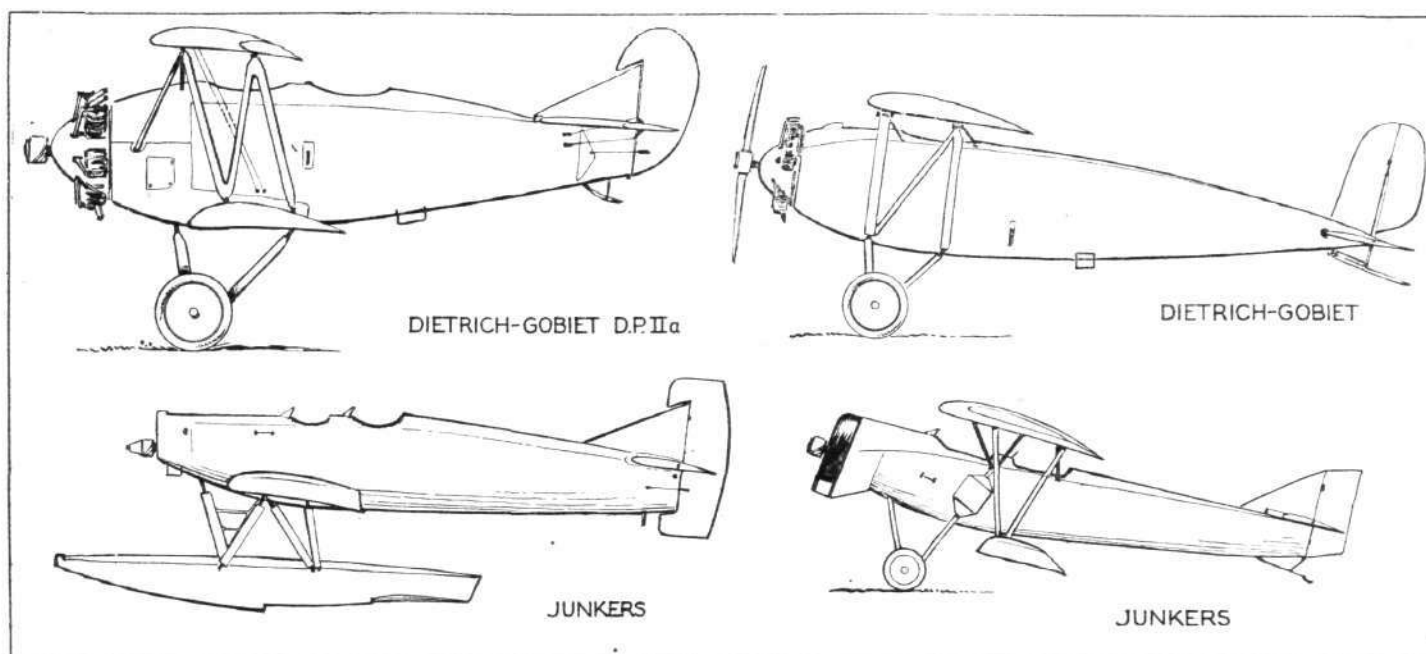


B.H. 16



B.H. 17

More silhouettes of aeroplanes from the Prague Aero Show. The majority of these are fairly small machines but the views given are not to scale.



Silhouettes of four German machines from the Prague Aero Show.

CZECHO-SLOVAKIA

"Aero" Tovarna Letadel, Prague

This firm, the designers and constructors of the "Aero" machines, was founded in 1919, and has produced a considerable number of different types. At the present Aero Show they are represented by five machines, the Ae 18, the Ae 12, the Ae 20, the Ae 24 and the Ae 18/16. The Ae 18 is a single-seater fighter with one of the new 220 h.p. Walter engines. A similar machine was exhibited at the Gothenburg Show last year, but had a B.M.W. engine of 185 h.p. With the new engine the machine has a very much improved performance, and holds the altitude record of the Czechoslovak Republic with 8,761 m. (28,750 ft.).

The Ae 12 is a two-seater fighter with 260 h.p. Maybach engine. Like all the "Aero" machines, it was designed by the firm's chief engineer and designer, Ing. Husnik. Two of our photographs show the machine and its Maybach engine. The Ae 12 is equipped for photography and general reconnaissance work, and is of the following dimensions:—Length o.a., 8.34 m. (27 ft. 5 ins.); span 12.782 m. (41 ft. 10 ins.); wing area, 36.88 sq. m. (400 sq. ft.). The useful load is 520 kilos. (1,150 lbs.). The horizontal speed, measured over a triangular course, is 200 km./h. (124 m.p.h.).

The Ae 22 is an adaptation of the Ae 12 for commercial work, being provided with seats for two passengers. This type will be used on the new air line between Prague and Mariánské Lázně (Marienbad).

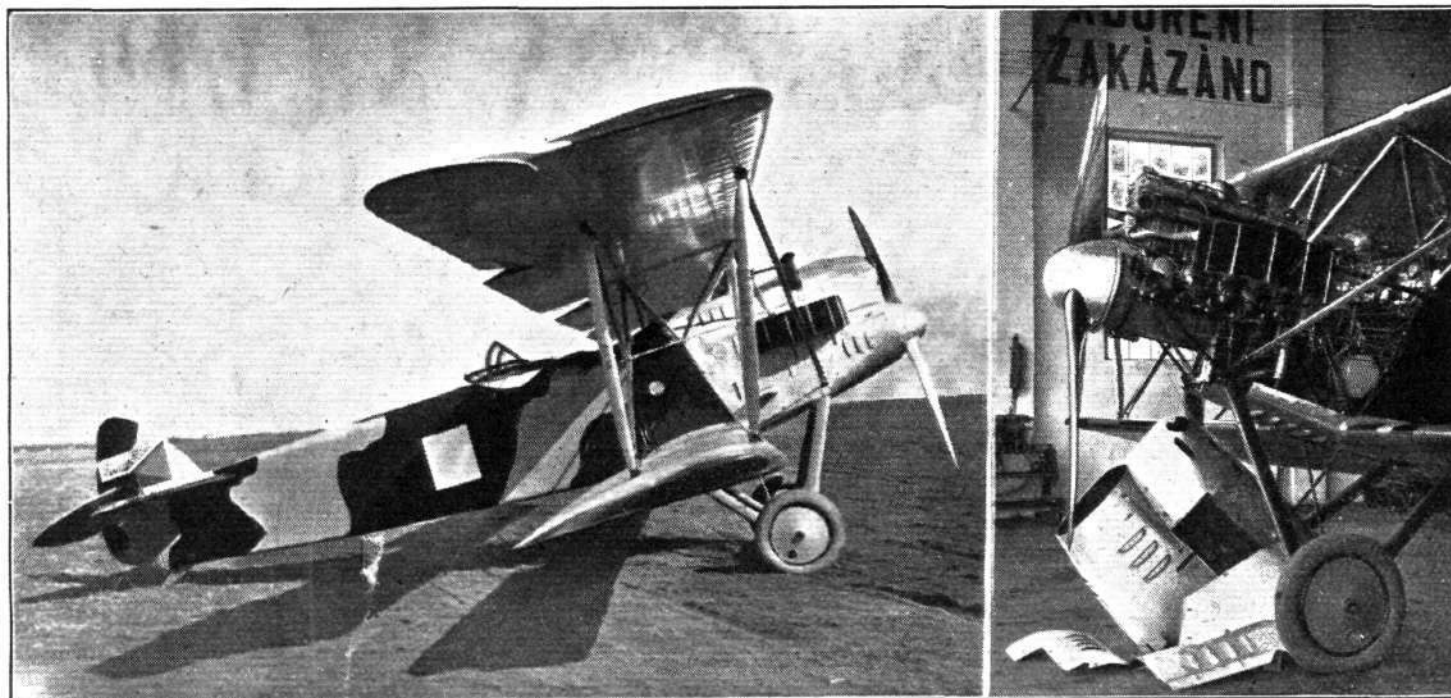
The Ae 24 is a twin-engined bomber, fitted with two 260 h.p. Maybach engines. A silhouette of this machine is published on another page, but no particulars are available at the moment.

The Ae 18/16 is a small biplane with 185 h.p. B.M.W. engine, but beyond this fact no particulars are available.

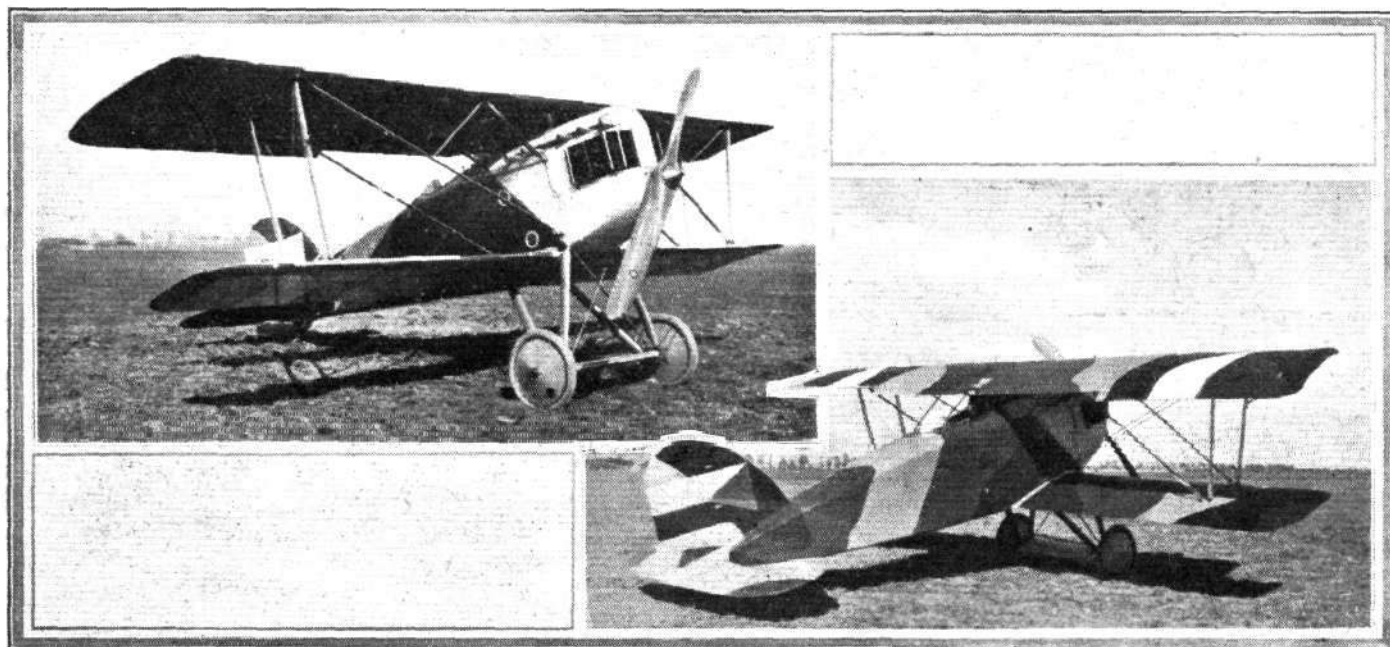
Milos Bondy a Spol

This firm, better known as "Avia," has an imposing exhibit, including no less than 11 machines, all of which are designated B.H. followed by a series number. We reproduce photographs of four machines only, the B.H. 3, the B.H. 7, the B.H. 9 and the B.H. 10. This firm has made a speciality of low-wing monoplanes, and some of their earlier types have been described in *FLIGHT* from time to time.

The B.H. 5 is a sporting monoplane, and it was a machine of this type which was piloted to victory at Brussels in 1923 by Mr. Lhota. Originally the machine was intended to be



The "Aero" A.12 two-seater fighter and reconnaissance biplane, with 260 h.p. Maybach engine. On the right a view of the engine with cowl removed. Note the curiously-shaped side-radiators.



Two Views of the "Aero" Ae. 18.

fitted with Siemens-Halske engine, but as this could not be obtained a 70 h.p. Anzani was fitted, with which the B.H. 5 performed very creditably. In a more recent form the machine is fitted with the new Czech Walter 60 h.p. engine. The main dimensions of the machine are:—Length o.a., 6.4 m. (21 ft.); span, 9.8 m. (32 ft. 2 ins.); wing area, 14 sq. m. (151 sq. ft.); weight empty, 320 kilos. (750 lbs.); weight loaded, 540 kilos. (1,190 lbs.). With pilot and passenger and fuel for 3½ hours at full throttle the performance is as follows: Maximum speed, 155 km./h. (96 m.p.h.); climb to 2,000 m. (6,560 ft.) in 12 minutes. Ceiling, 5,000 m. (16,400 ft.).

The B.H. 7 is a single-seater fighter with 300 h.p. Hispano-Suiza engine. It might be mentioned that the Hispano engines are now being manufactured under licence by the famous Skoda works. The machine is of the cantilever high-wing type, with the petrol tanks contained in the centre-section of the wing and giving direct gravity feed to the carburettors. The B.H. 7 is fitted with two synchronised Vickers guns, operated by a special "Avia" cam gear. The dimensions are:—Length o.a., 22 ft. 4 ins.; span, 33 ft. 1 in.; wing area, 193 sq. ft. The weight of the machine empty is 1,720 lbs., and the weight fully loaded is 2,400 lbs. Fuel for 2½ hours' flying is carried. The maximum speed at ground level is 162 m.p.h. and the climb to 16,400 ft. occupies 11 minutes. The ceiling is 29,500 ft.

Two examples of the "Avia" B.H. 9 are exhibited. This machine is a two-seater intended for school work or sport-

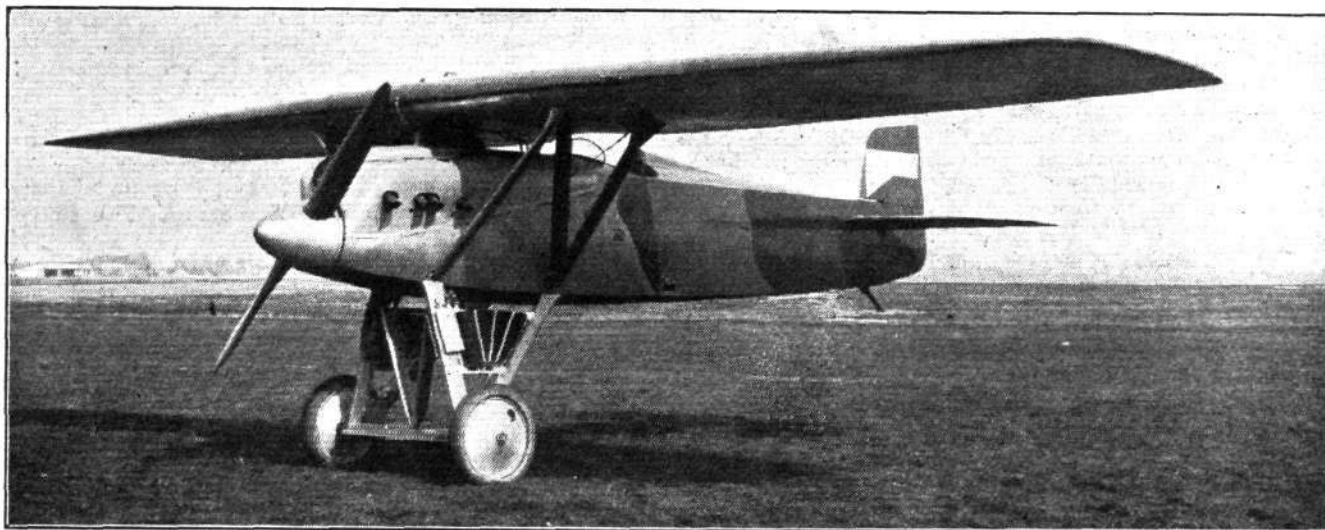
ing flying. The engine is one of the five-cylinder radial air-cooled Walters. The machine is said to be very stable, but can, at the same time, be stunted to a considerable extent. Dual controls are provided, and the pupil, when the machine is being used for school work, occupies the front seat. The main dimensions of the B.H. 9 are:—Length o.a., 22 ft. 1 in.; span, 32 ft. 3 ins.; wing area, 146 sq. ft. The weight of the machine empty is 760 lbs., the useful load 460 lbs., and the total loaded weight is 1,220 lbs. The speed near the ground is 99 m.p.h., and the machine climbs to 2,000 m. (6,560 ft.) in 12 minutes. The ceiling is about 13,000 ft.

A very similar but somewhat smaller machine, the B.H. 10, is also exhibited. This is to all intents and purposes a smaller "sister" of the B.H. 9. Its overall dimensions are smaller, it is a little faster, and is capable of all manner of stunts. In fact, the B.H. 10 is used extensively in the Czech flying service for teaching stunt flying. Like the B.H. 9, the B.H. 10 is fitted with 60 h.p. Walter engine. Its dimensions are: length overall, 18 ft. 2 ins.; span, 29 ft. 4 ins.; wing area, 105 sq. ft. The weight of the machine empty is 637 lbs. and the useful load is 278 lbs., bringing the total loaded weight up to 915 lbs. The maximum speed near the ground is 102 m.p.h., and the machine climbs to 2,000 m. in 10 minutes. The ceiling is 15,000 ft.

The B.H. 11 is a slight modification of the B.H. 9, and is used as a messenger plane in the Czecho-Slovak army. The main alteration is in the petrol tanks, which are somewhat larger and contain sufficient fuel for 4½ hours' flying. The



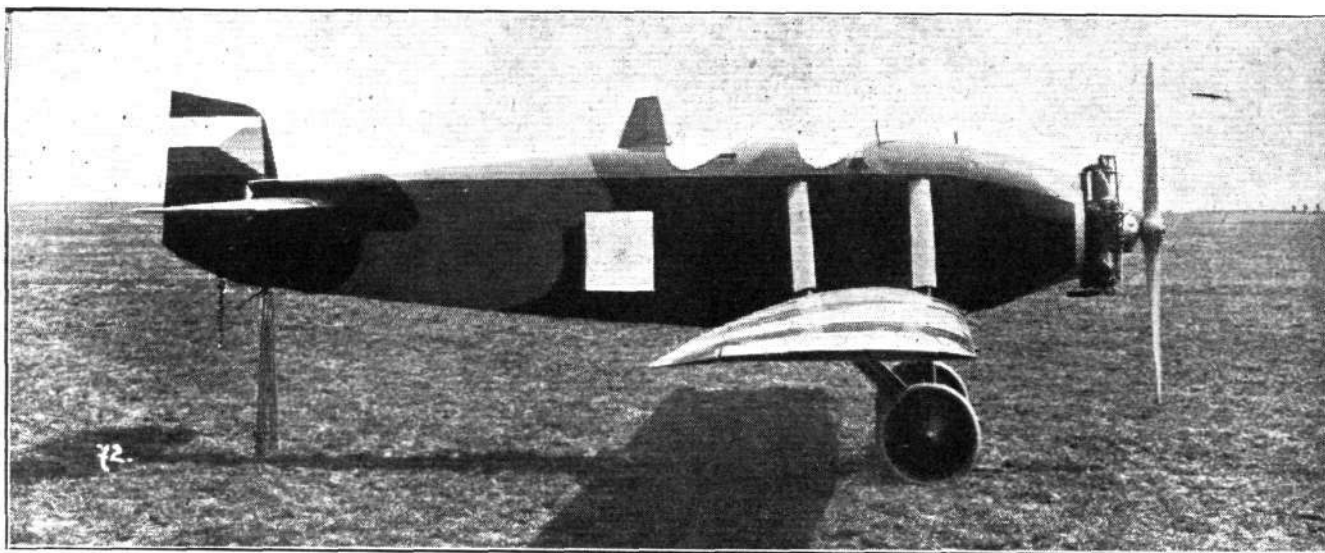
The "Avia" B.H.3. is a single-seater scout, fitted with the new Walter 220 h.p. engine. The radiator is placed under the fuselage.



The "Avia" B.H.7 parasol monoplane single-seater fighter. The engine is a 300 h.p. Hispano-Suiza. Note the radiators placed between the chassis struts.

dimensions are the same as those of the B.H. 9, and the performance is very nearly the same. It may be mentioned that recently a Czechoslovak record for duration and distance was established with the B.H. 9 by Mr. Lhota, who covered six laps of 200 kms. each, or a total distance of 747 miles,

which it resembles in general lines and in dimensions. The structure has, however, been re-designed so as to give the lowest possible weight, and the machine is intended for this year's Brussels competitions for touring machines. An innovation is the folding wings of this machine. For transport



The "Avia" B.H.9, two-seater sporting machine, fitted with 60 h.p. Walter radial engine.

in 9 hrs. 46 mins. The machine carried 230 litres of petrol in a large tank placed in the cockpit normally occupied by the passenger.

The B.H. 12 is the most recent modification of the B.H. 9,

the struts are disconnected, when the two wing halves swing around the front spar fitting and lie flat against the sides of the fuselage. Owing to the reduced weight the performance is slightly better than that of the standard B.H. 9.



The "Avia" B.H.10 single-seater 60 h.p. Walter engine.

The "Avia" B.H. 16 is a light monoplane with 16 h.p. Vaslin engine. It is a single-seater, of generally similar design to the other "Avia" low-wing monoplanes. The specimen exhibited is, as already stated, fitted with Vaslin engine, but a later type is, we learn, to be fitted with one of the 696 c.c. Blackburne "Tomtit" engines, which will be mounted in an inverted position as in the D.H. 53 and A.N.E.C. monoplanes. The dimensions of the B.H. 16 are: length overall, 5.45 m. (17 ft. 11 ins.); wing span, 9.5 m. (31 ft. 2 ins.); wing area, 10.6 sq. m. (114 sq. ft.). The weight of the machine empty is 125 kilos (275 lbs.) (this is with Blackburne engine) and the total loaded weight is 215 kilos (473 lbs.). The machine has not yet been thoroughly tested, but the following performance has been calculated: maximum speed at ground level, 120 km./hr. (75 m.p.h.); ceiling, 4,500 m. (14,750 ft.).

Two examples of the B.H. 17 are shown. This type is different from the majority of "Avia" machines in that it is a biplane. It is a single-seater fighter with 300 h.p. Hispano-Suiza engine, and is of the following dimensions: length overall, 6.73 m. (26 ft. 6 ins.); wing span (top plane), 8.86 m. (29 ft. 5 ins.); wing area, 21.08 sq. m. (234 sq. ft.). The weight empty is 830 kilos (1,830 lbs.), and the useful load is 303 kilos (670 lbs.). The total loaded weight is 1,133 kilos (2,500 lbs.). The maximum speed at ground level

is 240 km./hr. (150 m.p.h.), and the climb to 5,000 m. occupies 14 minutes.

The series number. The firm celebrates its five years' "jubilee" this year, having been founded in 1919, and as space has not permitted of exhibiting more than two complete machines, the "S 6" and the "S 8," scale models of the rest of the long series of Smolik types are shown. The Military Aircraft Factory, "Vojenska Tovarna na Letadla" is the oldest Bohemian aircraft factory, and was founded during the first year of the declaration of independence. Originally work was started at Kbely aerodrome, but the sheds and workshops there were burnt down, and the factory was removed to its present situation at Letnany.

Space does not permit of a detailed reference to all the Smolik machines, but it may be stated that already the series numbers run up to "S 18." There is also an "S 137," but this, presumably, does not necessarily indicate that 136 machines have preceded it. Briefly the Smolik series is as follows: "S 1," a two-seater fighter; "S 2," a two-seater reconnaissance machine; "S 3," an all-metal single-seater pursuit parasol monoplane; "S 4," an all-metal single-seater fighter (biplane); "S 5," an all-metal two-seater biplane designed for photographic work and for wireless; "S 6," an all-metal day bomber; "S 7," an all-metal single-seater "chaser"; "S 8," a racing monoplane fitted with Napier "Lion" engine; "S 9," a three-engined commercial machine with seating accommodation for 30 passengers; this machine

is 240 km./hr. (150 m.p.h.), and the climb to 5,000 m. occupies 14 minutes.

As distinct from the B.H. 17, the B.H. 19 is a low-wing monoplane single-seater fighter, also with Hispano-Suiza engine, so that comparison should be interesting between the two types, both for performance and for general characteristics, view, etc. The machine is very sturdily built and the good performance must therefore be ascribed to good aerodynamic qualities. The dimensions are wing span 10.8 m. (35 ft. 5 ins.); length overall, 7.38 m. (24 ft. 3 ins.);



is at present in course of construction; "S 10," a training machine; "S 11," a twin-engined commercial monoplane, now in course of construction; "S 12," an all-metal "chaser" monoplane for instructional purposes; "S 13," a cantilever wing "chaser"; "S 15," a four-engined monoplane intended for night-flying, now in course of construction; "S 16," a two-seater long-distance reconnaissance machine; "S 17," a four-engined "training" monoplane; "S 18," a preliminary training school machine; "S 137," a "trans-oceanic" aeroplane with seven engines totalling 2,400 h.p. It will thus



The "S.8" racing monoplane of the Czech Military Aircraft Factory. This machine is fitted with a Napier "Lion" engine, and is credited with a speed of 360 km/h. (225 m.p.h.).

wing area, 18.1 sq. m. (195 sq. ft.). The weight empty is 780 kilos (1,720 lbs.) and the total loaded weight is 1,157 kilos (2,550 lbs.). The maximum speed at ground level is 250 km./hr. (155 m.p.h.), and the climb to 5,000 m. (16,400 ft.) occupies 15 minutes. The ceiling is 8,500 m. (27,900 ft.).

Vojenska Tovarna na Letadla, Prague

This title covers the identity of the Military Aircraft Factory of Prague, whose chief designer is Mr. Smolik, after whom all this firm's machines are named "S," followed by

be seen that Mr. Smolik and his firm are not without ambition, and it is to be hoped that some of the "giants" will materialise.

Of the two machines exhibited the "S 6" is a day-bomber, largely constructed of metal. The fuselage and undercarriage are built of steel tubes, but the wings have wood spars and ribs. The petrol tanks, which have a capacity of 1,000 litres (220 gallons) are placed in the lower plane. The engine is a 260 h.p. Maybach. The "S 6" is of very German appearance to English eyes, its lines following those of typical German wartime machines rather than British or

French. The performance appears to be very good considering the relatively low power. The dimensions of the "S 6" are : Length o.a., 8.85 m. (29 ft.) ; wing span, 15.75 m. (51 ft. 7 ins.) ; the weight empty is 1,198 kgs. (2,640 lbs.) ; total loaded weight 1,848 kgs. (4,070 lbs.). The maximum speed near the ground is 186 km./h. (116 m.p.h.) ; the climb to 5,000 m. occupies 31½ min. Last year this type flew from Gothenburg to Prague in 6½ hours, or at an average speed of 155 km./h. (97 m.p.h.).

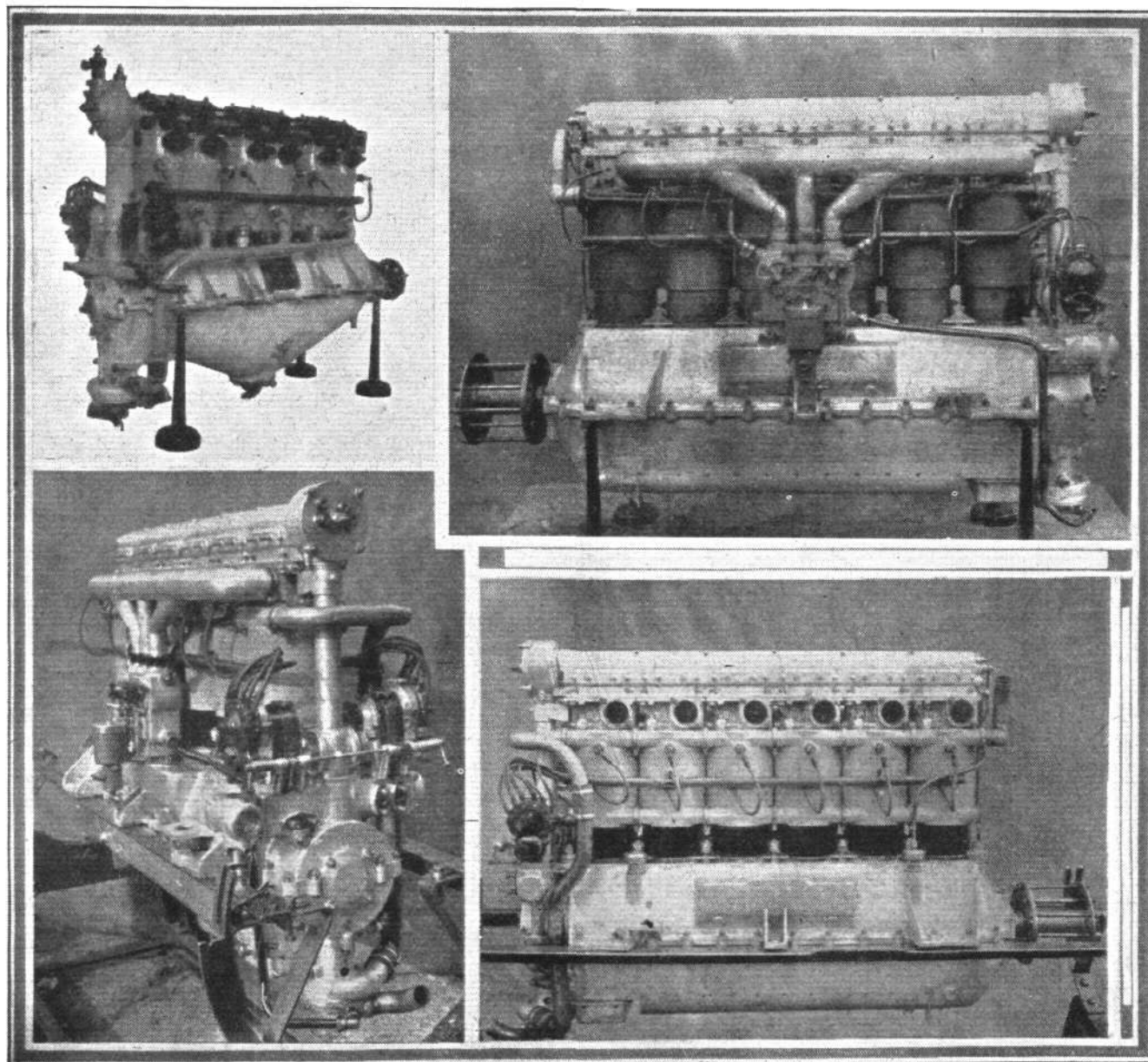
The second Smolik machine exhibited is a racing monoplane, the "S.8," with Napier "Lion" engine. This machine is mainly remarkable for the fact that the wing section employed is, or appears to be, absolutely symmetrical. In actual fact it can hardly be so, as there would then seem to be too great risk of loss of lift as the neutral angle of incidence was approached. It seems probable that the section is bi-convex, but with the top camber somewhat greater than the bottom camber. The accompanying photograph gives a very good idea of the clean lines of the machine, which was finished and tested last year. Certain alterations were, however, necessary, and these have now been carried out. So far as we can gather, the machine has not been tested after the changes were made. But few particulars relating to the detail construction are available beyond the fact that the "S.8" is built mainly of metal. The length of the machine is 8.3 m. (27 ft. 2 in.) ; wing span, 11.4 m. (37 ft. 5 in.). Weight, empty, 1,030 kgs. (2,270 lbs.) ; total loaded weight, 1,230 kgs. (2,710 lbs.). The wing loading is 74.8 kg./sq. m. (15.35 lbs./sq. ft.), and the power loading 2.73 kg. (6 lbs.) per h.p.

The speed is stated to be 360 km./h. (225 m.p.h.), but this is probably the estimated figure. In next week's issue we hope to be able to publish details of this machine.

Breitfeld, Danek i Spol, Prague

This firm commenced the manufacture of aero engines in 1915, beginning by manufacturing Hieronimus engines under licence, of which large numbers were delivered to the Czech flying services. The firm then got together a designing staff and commenced the production of aero engines of their own design. Up till now four distinct types of engine have been produced—a 100 h.p. 6-cylinder vertical known as the "Blesk," a 185 h.p. engine, also a six-cylinder-in-line called the "Perun I," and a six-cylinder engine known as the "Perun II," which is rated at 240 h.p. More recently the firm has designed a 12-cylinder vee-type engine, which has not yet been given a name, but which is designed to develop 450 h.p. The Breitfeld, Danek i Spol Works are situated at Karlin, Prague, and already manufacturing facilities exist which should suffice for the need of the Republic, should the Czech designers decide to employ the entire range of the firm's engines. Following are set out in tabular form the main characteristics of the four types of engines standardised by Breitfeld, Danek i Spol :—

	"Blesk"	"Perun I."	"Perun II."	450 h.p.
Rated h.p.	100	185	240	450
No. of cylinders	6	6	6	12
Bore (in mm.)	120	150	160	160
Stroke (in mm.)	140	180	190	190



BREITFELD, DANEK I SPOL : Below, rear view and exhaust side view of the 185 h.p. "Perun I." Above : Right, inlet side of 230 h.p. "Perun II" ; left, three-quarter rear view of 100 h.p. "Blesk," all 6-cyl. "verticals."

	"Blesk."	Perun I."	"Perun II."	450 h.p.
Revolutions per min.	1,400	1,400	1,400	1,400
Weight in lbs.	450	660	680	1,100
Petrol consumption (lb./h.p./h.)	0.506	0.43	0.43	0.43
Oil consumption (lb./h.p./h.)	0.044	0.022	0.022	0.022
No of valves per cylinder	2	2	2	4

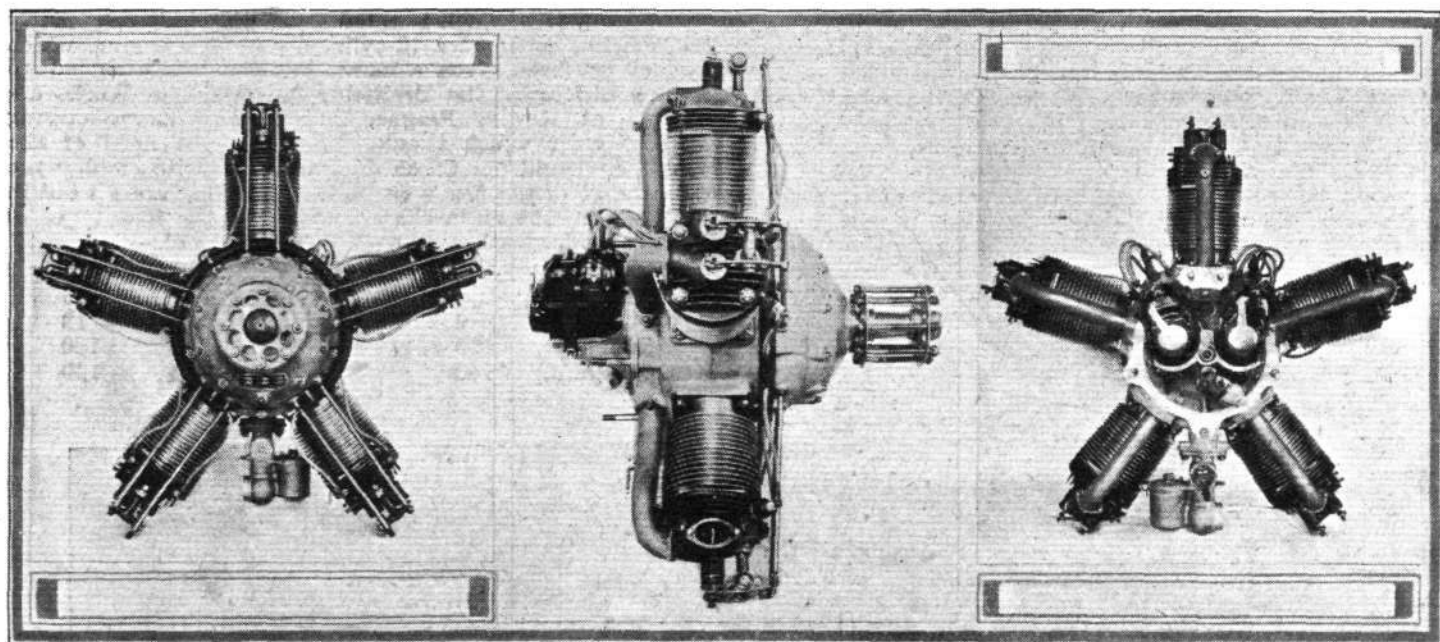
It will be seen that in all cases both petrol and oil consumptions are relatively low, even compared with British aero

the inlet valves and one the exhaust valves. No photograph of the 450 h.p. engine is available at the moment.

J. Walter a Spol, Prague

THE firm of J. Walter and Co. is one of the oldest Czech automobile manufacturers, and it is only during the last two years or so that they have turned their attention to the design and manufacture of aero engines. Nevertheless, already three separate types have been produced, all of which have, apparently, behaved well and are the present holders of the national records.

The first engine to be produced was the little five-cylinder



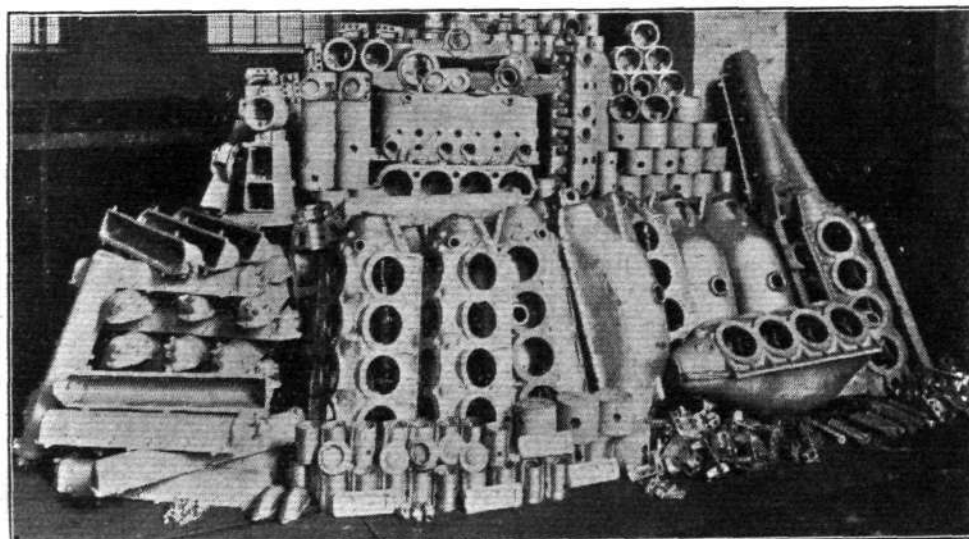
Front, side and rear views of the five-cylinder 60 h.p. Walter engine.

engines. The "Blesk" has been designed to supplant the 100 h.p. Mercedes engine where this has been fitted. In the Czech air service it is used mainly on school machines, and is stated to be very reliable.

The "Perun I" and "Perun II" are generally similar, as the accompanying photographs will show, but "Perun II" is a high-compression engine, which probably accounts for the extra power accompanied by but small increase in weight. Both engines are, as already mentioned, of the six-cylinders-in-line type, with separate cylinders and overhead camshafts. The new 450 h.p. engine, of vee-type (60 degrees) has four valves per cylinder, operated by overhead camshafts of which there are two for each bank, one operating

radial air-cooled of 60 h.p. This was designed for school work and sport planes, and is shown in the accompanying photographs. The other two types manufactured by Walter are six cylinder vertical engines, water-cooled, of course, one being rated at 185 h.p. and the other at 240 h.p. Of these two engines no photographs are, unfortunately, available.

The 60 h.p. radial Walter is of very clean design, as will be seen from the photographs. The bore and stroke are 105 and 120 mm. respectively, and the rated power of 60 b.h.p. is developed at a speed of 1,400 r.p.m. The petrol consumption is stated to be very low, i.e., 230 grammes (0.506 lb.) per horse-power per hour. The oil consumption



"Coan casts clean crankcases." The Czech equivalent to the famous Coan aluminium casters is the Skoda Works: A pile of aluminium castings, of which this firm makes a speciality.

is 16 grammes (0.0352 lb.) per horse-power per hour. The total weight in running order is 100 kg. (220 lbs.), so that weight per horse-power works out at 3.67 lbs. The engine is said to run remarkably smoothly, and has been used extensively in the "Avia" B.H. machines, where it has given excellent results. It may be mentioned that one of these engines was subjected to a 100 hours' run under the official supervision of the Ministry of National Defence.

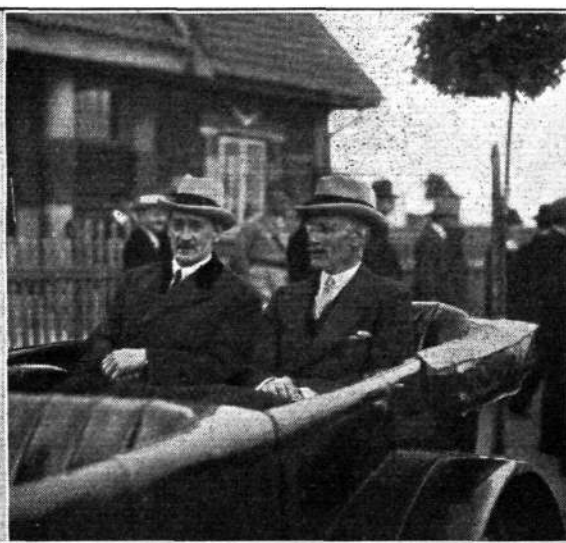
The cylinders have steel barrels, with aluminium fins shrunk on by a special process. The detachable cylinder heads are castings of, it is stated, a special "grey alloy." In the heads are the two ports for the inlet and exhaust valves, which are operated in the usual way by push-rods and rockers. The pistons are of special aluminium alloy. Pressure lubrication is employed, any surplus oil collecting in the lower part of the crank-case, whence it is returned to the tank by a scavenger pump. The ignition system is duplicated, two Scintilla magnetos being mounted on the back of the engine. The carburettor is a vertical Solex. It may be stated that it was with an engine of this type that the "Avia" B.H. 9 established a Czechoslovak record for distance (1,200 km.) and duration on May 13 of this year.

We hope next week to be able to give further details of the two six-cylinder water-cooled Walter engines. In the meantime the following data may be of interest. The 185 h.p. engine has a bore of 150 mm. and a stroke of 180 mm. The rated power is developed at a speed of 1,400 r.p.m. The larger engine develops close upon 300 b.h.p. at 1,400 r.p.m., although it is only rated at 240 h.p. The bore and

stroke of this engine are 160 mm. and 190 mm. respectively and the fuel consumption is 0.48 lb. per horse-power per hour. The oil consumption is 16 grammes (0.035 lb.) per horse-power per hour. The smaller engine, dry, weighs 287 kgs. (632 lbs.) and the larger 304 kgs. (668 lbs.). Both types have been subjected to bench tests under the supervision of the Ministry of National Defence, and the smaller engine was fitted in the Ae 18b which gained the Czech speed record of 230 km. (144 m.p.h.) last year. The larger type was fitted in the Army aeroplane Ae 18 which established a Czechoslovak altitude record of 9,140 m. (30,000 ft.).

Skodovy Zavody, Plzen

This firm, formerly the Skoda Works, was, as is of course well known, the Austrian equivalent of the German Krupps. In addition to armaments the firm now manufactures all sorts of components for aero engines, automobile engines, etc. Of more immediate interest in connection with the Prague Aero Show is the fact that this firm manufactures under licence the 300 h.p. Hispano-Suiza engine, of which great numbers have been produced for Czechoslovakia. One branch of this very important firm may be said to be the Czech equivalent to our own Coan, inasmuch as it makes a speciality of aluminium castings. Crank cases, pistons, etc., are among the objects manufactured, and one of our photographs shows a heap of such components. At present space does not allow of a more detailed reference, which must be reserved for a future occasion.



BRITAIN'S AIR MINISTER IN PRAGUE: On the left a group, photographed immediately after the arrival of the D.H.50 at the Kbely aerodrome, in which may be recognised Mr. Frank Hodges, Lord Thomson, General Brancker, and Sir George Russell Clarke, British Minister at Prague. On the right Lord Thomson is seen driving away from the aerodrome, accompanied by Sir George Russell Clarke.

OPENING OF THIRD INTERNATIONAL AERO EXHIBITION, PRAGUE

THE Third International Aero Exhibition at Prague was opened on Saturday, May 31, by the President of the Czechoslovak Republic, Professor Masaryk, in the presence of a distinguished gathering, including official representatives of Great Britain, France, Germany, Austria, etc. Present at the opening ceremony on behalf of Great Britain were Lord Thomson, Secretary of State for Air, Major-General Sir W. Sefton Brancker, Director of Civil Aviation, and Sir George Russell Clarke, British Minister at Prague.

Lord Thomson and General Sir Sefton Brancker travelled to Prague on Friday, May 30, in one of the de Havilland D.H.50's (Siddeley "Puma" engine), piloted by Capt. Broad, the de Havilland test pilot. The third passenger was Mr. Frank Hodges, Civil Lord of the Admiralty, who was going to Vienna, and who was consequently "given a lift" as far as Prague. The particular D.H.50, by the way, was the machine fitted with the new de Havilland automatic camber gear recently described in *FLIGHT*, so that the Czechs had an opportunity of seeing one of the very latest devices for reducing the landing speed of an aeroplane.

Leaving Croydon at 7.36 a.m. (pictures on p. 353), the machine arrived at Cologne at 10.31, where a stop was made in order to witness the military review. A start was made again at 1.30 p.m. and the Kbely aerodrome of Prague was reached at 4.30 p.m., the actual flying time taken to cover the 700 miles' distance being 6 hours 20 minutes. On Friday

evening the party dined with Sir George Russell Clarke, British Minister at Prague, and various Czech officials. On Saturday they attended the opening of the exhibition by Professor Masaryk, with whom they later had an audience. On Sunday morning, June 1, the air travellers left Prague at 7.30, stopped at Cologne for lunch, and arrived in London in time for dinner. The whole journey was made without a hitch, although the return trip took somewhat longer than the outward one, on account of a strong head wind.

In an interview with press representatives at the Air Ministry on June 3, Sir Sefton Brancker gave some of his impressions of the trip and of the exhibition. The thing to keep in mind, as regards the journey, he said, was that the flight was not made over an organised route, and that the weather reports available were somewhat dilatory. It was generally considered, he stated, that it was a very good thing that this country decided to exhibit at Prague, and he thought the £12,000 which it was estimated the show would cost, and half of which was being paid by the Air Ministry, was money well spent. The Director of Civil Aviation was particularly impressed by the originality of ideas and the good workmanship displayed in the machines of Czech design and construction, and he spoke highly of the Kbely aerodrome of Prague, which was large, easily reached, with good shed accommodation and a large wireless station, and in fact everything ready for the air traffic when it developed.

THE ROYAL AERO CLUB OF THE U.K.

OFFICIAL NOTICES TO MEMBERS

GORDON BENNETT BALLOON RACE

THE Gordon Bennett Balloon Race will take place at Brussels, on Sunday, June 15, 1924. The following countries will compete:—Belgium, France, Switzerland, Great Britain, United States, Sweden, Italy, and Denmark.

The Royal Aero Club has selected two competitors to represent Great Britain:—

"Banshee III" (Owner: Mrs. John Dunville); pilot: Squadron-Leader F. A. Baldwin; assistant: Lord Edward Grosvenor.

"Margaret" (Owner: Mr. E. Allen); pilot: Capt. C. W. Spencer; assistant: Capt. C. W. Berry.

THE KING'S CUP

(Under the Competition Rules of the Royal Aero Club)

Presented by His Majesty the King

The King's Cup will be awarded to the entrant of the Aircraft which completes the course in the shortest handicap time within the period allowed for the race.

Prizes

1st Prize, The King's Cup and £100 presented by Samuel Samuel, Esq., M.P.

2nd Prize, £100 presented by Sir Charles Wakefield, Bart.

SUPPLEMENTARY REGULATIONS

1. *Date.*—The Race will start at 5.30 a.m. on Saturday, July 26, 1924, and will remain open until half-an-hour after sunset on the same day.

2. *Organisation.*—The Race shall be conducted by the Royal Aero Club under the Competition Rules of the Royal Aero Club.

3. *Competitors.*—The entrant and pilot or pilots must be British subjects. The entrant must be an individual and not a company.

4. *Aircraft.*—The Race is open to any type of aircraft. The aircraft, including the engine or engines, must have been entirely constructed in the British Empire.

5. *Entries.*—The entry fee is £10. This fee, together with the entry form, must be received by the Royal Aero Club, 3, Clifford Street, London, W.1, not later than 12 noon on Saturday, July 12, 1924. Half of the entry fee will be refunded to all starters.

6. *Air Navigation Regulations.*—Competitors must comply with the Air Navigation Regulations in force.

7. *Course.*—The course will be approximately 950 miles, as follows:—

Starting place—

Aeroplanes	Martlesham Heath.
Seaplanes	Felixtowe.
Other types	Either place.
First turning point ..	Leith 333 miles.
Second turning point ..	Dalmuir 48 "
Third turning point ..	Falmouth, Cornwall 395 "
Finishing place	Lee-on-Solent.. 174 "

Approximately 950 miles.

Full particulars of these turning points will be issued later.

8. *Handicap.*—The aircraft will be handicapped on a time allowance basis for the whole course.

All competitors will be started at the same time, and the handicap time allowance will be deducted from the time taken in completing the course.

9. *Finish.*—The finishing line, which must be crossed in flight, will be at the Pier at Lee-on-Solent.

10. *Controls.*—There will be no controls, and competitors may alight when and where they like, either for rest or for taking in supplies of fuel, for which they must make their own arrangements.

11. *Turning Points.*—Observers will be placed at each turning point, which each competitor must pass on his left, at a height of not more than 500 ft., and at a sufficiently close range, so that his identification mark may be easily verified by the Official Observer.

12. *Repairs.*—The same aircraft and engine must be used throughout the Race, but repairs and replacements are allowed.

Any competitor discarding a part of, or otherwise altering the aircraft during the Race, so that it differs in any way from that which was presented to the officials, will be disqualified. Competitors will be responsible for any infringement of this Regulation by third parties.

13. *Identification of Aircraft.*—For the purposes of identification all aircraft must carry the Government Registration Marks as laid down in the Air Navigation Regulations, except in the case of Service Aircraft, for which special instructions will be issued.

14. *Pilot and Crew.*—The pilot and/or crew must not be changed during the Race. The same number of passengers, if any, or the equivalent weight, viz., 170 lbs. per passenger, must be carried throughout.

Further Regulations giving the arrangements for the start and finish will be issued later.

The Royal Aero Club reserves to itself the right to add to, amend, or omit any of these Rules should it think fit.

Offices: THE ROYAL AERO CLUB,
3, CLIFFORD STREET, LONDON, W.1
H. E. PERRIN, Secretary.

Our New Commercial Aeroplanes

AT the Air Ministry, on June 3, Major-General Sir Sefton Brancker, in a statement to representatives of the press, is reported to have said that five new types of commercial aircraft were being developed for use by Imperial Airways, Ltd. *The Times* account states that one of these machines is the new Handley-Page three-engined type (which was fully described in *FLIGHT* recently). The next, according to *The Times*, is the Fairey "floating" seaplane with Rolls-Royce "Condor" engine. One recognises in this the Fairey float seaplane, which is being developed for commercial aviation. For the cross-channel services two types are being developed. One of these is a de Havilland, which will have a Rolls-Royce "Condor," and which will, again according to *The Times*, be equipped with the new de Havilland automatic "flat" gear. This presumably refers to the variable camber gear recently described in *FLIGHT*. Yet another type is being built by Handley Page, and will, it is stated, probably have a Bristol "Jupiter" engine. This machine will be fitted with the Handley Page "slatted wings," *The Times* states. Finally, according to the *Daily Telegraph*, General Sir Sefton Brancker is reported to have said that with reference to the big three-engined machines for Imperial communications, "recently the subject of much ecstatic comment," which should be capable of flying to Malta without stopping, such a machine was at present an unrealisable proposition. A machine could be built, he said, which would be capable of making the journey, but there would be practically no margin of lift for paying load. This tallies with the opinion expressed in *FLIGHT* some time ago, that the available load of a

large three-engined machine designed to the Air Ministry's requirements would approximately be postage stamps.

Altogether things are looking up. We are to have "floating" seaplanes and machines with "automatic flats" (these should help the housing problem) and "slatted wings." Now we shan't be long.

Old Friends Back Again

THEIR many friends in London will be glad to hear that a short time ago Mr. Douglas W. Thorburn and Mrs. Thorburn arrived in town on holiday bent, after a three-years' sojourn on the French Riviera. Mr. and Mrs. Thorburn have "descended" at 10, Hanover Street, Mayfair (telephone: Mayfair 5365), where they will be pleased to see old friends. At present the duration of their stay in London has not been decided.

Mr. A. S. Butler Returns to Prague

AFTER a short stay in London, on his return from his very successful aerial tour of Central Europe, Mr. Alan S. Butler, chairman of the de Havilland Aircraft Company, Ltd., left Croydon again on Friday, May 30, for Prague. On his tour, Mr. Butler was, of course, his own pilot, and the fact that he should have been able to complete the tour without any serious difficulty speaks well for his capabilities not only as a pilot but as a navigator. Mr. Butler did not, it should be remembered, have the advantage of organised air routes to follow, and had to do his tour entirely "on his own." He left Croydon for Prague in his private D.H.37 ("Sylvia") with Rolls-Royce engine at 11.30, and completed the trip in the remarkably short flying time of 5½ hours.

LIGHT 'PLANE AND GLIDER NOTES

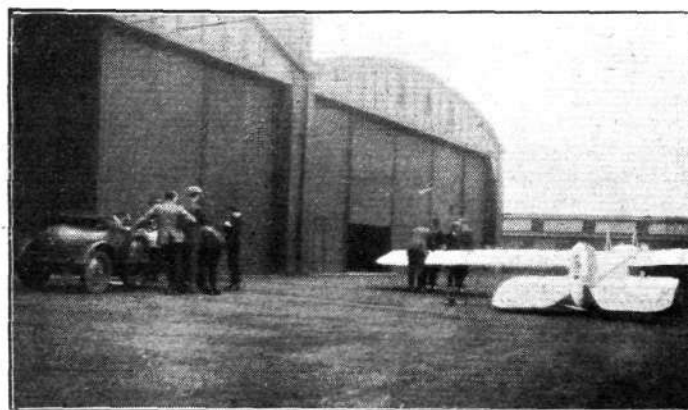
Those wishing to get in touch with others interested in matters relating to gliding and the construction of gliders are invited to write to the Editor of FLIGHT, who will be pleased to publish such communications on this page, in order to bring together those who would like to co-operate, either in forming gliding clubs or in private collaboration.

As far as can be gathered but one light 'plane, in so far as we understand the definition, is being exhibited at Prague. This is the "Avia" firm's B.H.16, which is fitted at present with a Vasin engine. Later types will probably, we learn, be fitted with the Blackburne "Tomtit" of 696 c.c. This engine will be mounted "upside down" as in the A.N.E.C. monoplanes at Lympe and the De Havilland D.H.53 at the Hendon meeting and later. The D.H.53, by the way, will be giving demonstrations at the Kbely aerodrome at Prague during the meeting that is to follow the actual exhibition, and the Czechs should thus have a good opportunity of seeing this splendid British light monoplane. Incidentally it should be possible to make a fairly good comparison between the D.H.53 and the B.H.16, as both are of very similar type. The "Avia" firm commenced their activities by building machines of this type, although of greater power, and their first machine, the B.H.1, was described in FLIGHT some years ago. The low wing position, the tapering wings, thick at the point of attachment of the wing struts and thinning down to root as well as to tip, were features of the first "Avia" machines, and have been retained in most of the B.H. types ever since, even in those of 300 h.p. or more. Our correspondent gives a very good report of the "Avia" B.H.16, and we hope to be able to publish fairly full particulars of this neat little machine at an early date.

THE Albatros L.66, although being generally of the light 'plane class, can scarcely be included, as it is stated to be intended for a 40 h.p. engine. Nevertheless it will probably be found to compare in engine power with the machines actually produced after this year's Lympe competitions, which will almost certainly have engines of greater capacity than the 1,100 c.c. permitted for the trials themselves. It is usually considered that the 1,500 c.c. engine not specially tuned up may be compared with the 1,100 c.c. upon which particular care has been bestowed for competition work, and to that extent the Lympe trials may give a reasonably good picture of the machine of the future with slightly greater capacity. The Albatros is not a pretty machine, certainly nothing like as pleasing in appearance as the B.H.16, but it is stated to be very stable, quite controllable, and should afford a good view to both occupants.

MAJOR-GENERAL SIR SEFTON BRANCKER, Director of Civil Aviation, is reported to have outlined, in a statement to press representatives, made at the Air Ministry on June 3, plans for the establishment of flying clubs in various parts of the country, and the assistance, financial and otherwise, by the Air Ministry. We are more than glad to know that at last something is to be done, and that the Air Ministry intends to give practical expression to its oft-repeated desire for developing the "air sense." Hitherto it is to be feared that the "encouragement" has been of the wrong sort.

ONE particularly bad example has come to our notice quite recently. This is provided by the Lancashire Aero Club, which was established some time ago, and whose members have already built two gliders, one of which will, it is hoped, be fitted with a Blackburne engine. The Club was founded upon lines which should encourage all interested in aviation to become members, and the subscription fee was kept to the very low figure of 10s. 6d. per annum. The membership is already close upon 100, and, as we have said, two machines have been built, one of which is shown in the accompanying photograph. These machines are being housed at the Alexandra Park Aerodrome, Manchester, and at present the Lancashire Aero Club is being charged by the Air Ministry 25s. per month for the housing of each machine. This in spite of the fact that there are something like a dozen sheds empty on the aerodrome.



VIEW OF SOME OF THE HANGARS ON ALEXANDRA PARK AERODROME: On the right may be seen the Monoplane Glider constructed by members of the Lancashire Aero Club

THE Lancashire Aero Club is anxious to build another machine, and if it were not for the fact that the housing of a third machine would bring the cost of housing up to £3 15s. per month, the machine would undoubtedly be built. As it is the fee proves to be the straw that breaks the camel's back, and the third machine remains "on paper" only. A quaint form of Government "encouragement," is it not?

In case the Air Ministry has not heard of the Lancashire Aero Club, we may mention that its headquarters are at Didsbury Aerodrome, Manchester. The Club is now affiliated to the Royal Aero Club, and members meet as a rule on Wednesday evenings and on Saturdays. The constructional work is being carried out at the Alexandra Park Aerodrome, and the Club includes among its members seven pilots, two riggers, one engine tester, three Ground Engineers, several trained fitters and woodworkers and one designer. Under the direction of these, the unskilled members have assisted in building the machines with the ready assistance of the staff at A.V. Roe's Manchester works. The Hon. Sec. of the Club is Mr. T. Wood, A. V. Roe and Co., Ltd., Newton Heath, Manchester.



THE D.H. 53 LIGHT MONOPLANE: This machine, fitted with a 696 c.c. Blackburne engine, has been sent to Prague, where it will give demonstration flights at the Kbely Aerodrome. It was on a similar machine that Mr. Alan J. Cobham flew from London to Brussels in less than four hours.

THE very sporting offer of the U.S. Naval Authorities—to which we referred last week—whereby Squadron Leader MacLaren's spare machine awaiting him at Tokio would be transported to him on U.S. destroyers, has been accepted. So, all being well, the British attempt will be resumed in the course of a couple of weeks or so. The new machine was transhipped from the Canadian Fisheries Protection vessel *Thiepval* to the U.S. destroyer *John Paul Jones* on May 29. The destroyer left Hakodate immediately for Hong Kong, where it arrived on June 2. Here the machine was transhipped to another U.S. destroyer which was to proceed to Akyab, where it should arrive on or about June 7.

It may be of interest to note here, in connection with the breakage of the reduction gears of the original engine of MacLaren's machine, that the faulty reduction gear has been

examined by a well-known metallurgist, whose report states that failure was not due to defective steel, defective heat treatment or bad machinery, but was the result of over-stressing and fatigue.

As regards the American world flight, having completed the overhaul, etc., of their machines, Lieuts. Smith, Wade and Nelson left Kasumigaura (just outside Tokio) early on Sunday morning, June 1, and arrived at Kushimoto (about 270 miles from Tokio) shortly after 10 a.m. After re-fueling it was intended to resume the journey to Kagoshima the same day. Stormy weather set in, however, and they could not proceed until the following day, when they set out at 12.55 p.m. They arrived at Kagoshima, which is about 120 miles from Nagasaki, six hours later. The Americans have thus added, roughly, 500 miles to their total.

L.T. PELLETIER D'OISY duly received the Breguet machine offered him by the Tsuchun of Chekiang, Lu Yung-kyang. He was unable to start right away, however, for he found that the engine showed traces of heavy wear, so he decided to change the engine. This was eventually accomplished, and on May 29 he left Shanghai at 5.30 a.m. Twelve hours later he arrived at Nanyuan aerodrome, Peking, after a journey of 700 miles. He was in an exhausted condition owing to the extreme heat and extra strain required flying the older type of machine. It was originally intended to break the journey at Nanking or Hsuehou-fu, but as the Tsuchun of Kiangsu—who was apparently jealous over his rival's action in offering d'Oisy the Breguet—warned the French Consul-General in Shanghai that if d'Oisy landed at either of these places the machine would be confiscated, d'Oisy decided not to land! However, d'Oisy was accorded a magnificent welcome at Peking, and was presented with numerous mementoes.

On June 2 Lieut. d'Oisy left Peking at 6 a.m. and at 7.50 a.m. arrived at Peitaiho. After an hour's stop there for replenishments, he continued his journey and arrived at Mukden at 11 a.m., having covered a distance of 500 miles. He was

received by the local Governor and M. Poulet—the well-known French pilot who is running a flying school there. Early next morning he started off again and arrived at Pyong-Yang.

CAPT. BRITO PAIA and Lieut. Sarmento Beires, the Portuguese airmen who are flying to Macao, having got the "D.H.9A" biplane, purchased from the R.A.F. in India to replace their smashed Breguet, resumed their journey on May 30, making a successful departure from Lahore. It is reported that their machine resembled a pantechicon with all the spares they carried—which included engine parts, batteries, airscrew, extra petrol tank and a complete under-carriage! The third member of the party, Lieut. Goveia had—much to his disappointment—to be left behind, but is proceeding to Calcutta, where the machine will be altered to accommodate him. However, they reached Ambala safely, 160 miles onward. They left Ambala the next morning at 5.30 a.m., and arrived at Allahabad at 10.15 a.m., having thus covered the 520 miles in very good time and without incident. At 5.15 a.m. the next morning, June 1, they left Allahabad for Calcutta, where they arrived about 10 a.m.

The following are included in the official list of His Majesty's Birthday Honours:—

K.C.B. (Military Division).

Air Vice-Marshal Philip Woolcott Game, C.B., D.S.O., R.A.F.

C.B. (Military Division).

Group Capt. Lyster Fettiplace Blandy, D.S.O., R.A.F.

O.B.E. (Military Division).

Capt. (temp. Major) John Holthouse, South African Air Force.

The following in recognition of the valuable services rendered in the recent successful seaplane flight round Australia:—

Wing-Comdr. Stanley James Goble, D.S.O., O.B.E., D.F.C., Royal Australian Air Force.

Flight Lieut. Ivor Ewing McIntyre, A.F.C., Royal Australian Air Force.

C.B.E.

Harry Ekermans Oakley, Esq., O.B.E., M.Inst.C.E., Deputy Director of Works and Buildings, Air Ministry.

C.B.E. (Military Division)

Air Comm. John Glanville Hearson, C.B., D.S.O., R.A.F.

O.B.E. (Military Division).

Sqdn. Ldr. Charles Hubert Boulby Blount, M.C., R.A.F.

Flight Lieut. Maurice Moore, R.A.F.

Flight Lieut. Gerald Mornington Bryer, A.F.C., R.A.F.

Capt. (temp. Maj.) John Holthouse, South African A.F.

M.B.E.

Ronald McKinnon Wood, Esq., A.M.Inst.C.E., Principal Technical Assistant, Royal Aircraft Establishment, Farnborough.

M.B.E. (Military Division).

Flying Officer Robert Samuel Bruce, R.A.F.

Flying Officer Ernest Whittlesea, R.A.F.

Observer Officer Kenneth Cordell McKenzie, R.A.F.

No. 302780 Sergt.-Maj. C. I. Richard Eric Gorwood, R.A.F.

THE King has given orders for the following appointments, promotions, and awards for valuable services rendered in the field in connection with military operations in Waziristan, January, 1922, to April, 1923:—

C.B.E. (Military Division)

Wing-Comdr. W. G. S. Mitchell, D.S.O., M.C., A.F.C., R.A.F.

M.B.E. (Military Division)

Observer Offr. P. J. Hayes, A.F.C., R.A.F.

The names of the following have been brought to notice for distinguished service during the operations in Waziristan, January, 1922, to April, 1923, by Gen. Lord Rawlinson of Trent, G.C.B., Commander-in-Chief in India, in the dispatch dated July 25, 1923 (Published in the Supplement to the *London Gazette* dated February 27, 1924): Wing Comdr. W. G. S. Mitchell, D.S.O., M.C., A.F.C.; No. 206462 Sgt. F. H. Pearce; No. 246378 Sgt. O. F. Pritchard; No. 205852 Sgt. H. W. C. Springham.

Flying Officer P. A. de Fontenay; Sqdn. Ldr. E. O. Grenfell, M.C., A.F.C.; Flight Lt. S. B. Harris, A.F.C.; Flight Lt. A. M. Wray, M.C., A.F.C.

232646 A.C.1 A. D. S. Stears.

2696 F./Sgt. H. E. Newing.

NOTE.—Since the date of the services for which officers and other ranks are mentioned, there have been in some cases promotions, relinquishments of rank and transfers to other units, etc.

The King has approved of the award of the Air Force Cross to the following officers of the Royal Air Force:—Flight Lieut. H. L. Macro, D.F.C., and Flying Officer C. E. Horrex.

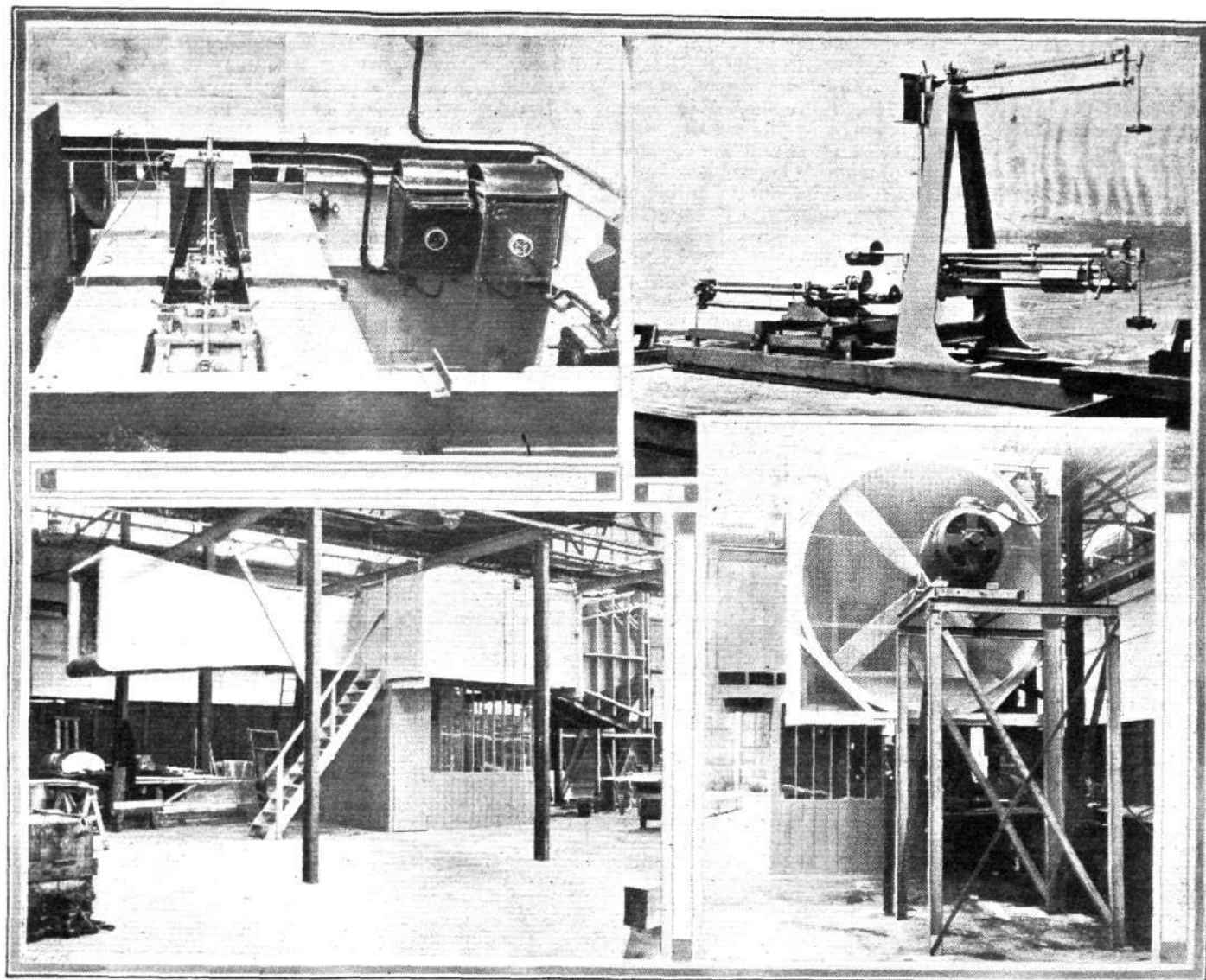
A NEW ADDITION TO "WESTLAND" EQUIPMENT

4-Foot Wind Tunnel Designed and Built by "Westland" Staff

GRADUALLY all the larger British aircraft firms are equipping themselves with all the appliances necessary to carry out research and experimental work. There are now very many aircraft firms who have their own aerodynamic laboratory, complete with wind tunnel, etc., and there is no gainsaying the fact that the possession of a wind tunnel is a very great asset to a designer. To begin with, although firms can have models, component parts, etc., tested at the National Physical Laboratory and at the Royal Aircraft Establishment, Farnborough, there is usually considerable delay in obtaining the results. This is not meant as a criticism of these laboratories, but is inevitable in the nature of things. We think all the

that scale effect should not greatly affect the results. The channel has been verified by taking the whole range of lift coefficients, drag coefficients and centre of pressure coefficients of a standard aerofoil which was placed at the disposal of the Westland technical staff by the National Physical Laboratory.

It is of interest to record that the properties of this aerofoil were unknown to the member of the Westland staff who has been placed in charge of the wind tunnel experiments, and that the results obtained by him in the Westland tunnel were found, upon comparison, to tally extremely well with the figures obtained at the N.P.L. It may, there-



THE NEW WESTLAND WIND TUNNEL : Bottom : Left, general side view of channel ; right, outlet end of channel, showing separate structure carrying motor and fan. This has been designed to obviate vibrations of the main channel structure. Above : Left, end view of roof balances and front view of electrical controllers for regulating wind velocity ; right, enlarged side view of roof balances.

private firms will admit, and Westland's certainly do, that they have had very good service from these establishments, but it can never be the same as having a wind tunnel available at any time and for any subject, such as is afforded by the possession by a private firm of its own wind tunnel.

Realising this, the Westland Aircraft Works, of Yeovil, have just completed the installation of a new four-foot wind tunnel. The channel is not remarkable in design, and follows standard practice, but what is, perhaps, remarkable is the fact that the whole of the channel, apparatus, etc., with the exception of the electric motor, the controller, the standard weights of the balance, and the necessary glass work, were designed and constructed by the Westland staff.

As already stated, the channel is 4 ft. square, and it is possible to work at speeds as high as 75 ft. per second, so

fore, be taken for granted that the Westland tunnel will give accurate results, at any rate within the same experimental limits as obtain in well-trying four-foot channels, which is certainly all that could be asked, and reflects the greatest credit on those responsible for the design and construction of the Westland wind channel.

With reference to the channel itself, we have already pointed out that this is of orthodox design, and certain portions of the apparatus are shown in the accompanying photographs. The roof balances should be observed, as also the fact that the motor and fan are mounted on a structure separate from the main channel structure. The channel should therefore be particularly free from vibrations. As the Westland Aircraft Co. are building certain machines of unusual design, the new channel should be of great assistance.

THE NEW AIRSHIP SCHEME

In the Supplementary Estimate (Air Service), published on May 20, of the further sum required during the year ending March 31, 1925, beyond the sum already provided in the grant for Air Services, £350,000 is sought in connection with the development of airships. The Vote and Sub-heads of the Air Estimates under which this Vote will be accounted for by the Air Ministry are given as follows:—Vote 3.—Technical and Warlike Stores (including experimental and research services), 1924-25. A.5.—Airships, £150,000. A.A.—Airship Development, Research; construction of airship and of bases at home and abroad; salaries, wages, materials and incidental expenses, £200,000. Total, £350,000. The following explanatory note is given in connection with the above:—

The present Estimate makes the necessary initial provision for a programme of airship development, which, so far as at present authorised by His Majesty's Government, will extend over three years. This programme is in two parts, which will be proceeded with concurrently:—

(a) Airship development under the direct control of the Air Ministry, comprising research, full-scale experiments with an existing ship, the enlargement of the existing shed at the Royal Airship Works at Cardington and the erection of a shed in India, the provision of mooring masts, gas plants, etc., at home and abroad, and the construction at Cardington of a new airship of approximately 5,000,000 cubic ft. capacity, to be designed with special reference to the requirements of Imperial defence, including naval reconnaissance;

(b) the construction by a private firm of an airship of similar dimensions, to be designed on commercial lines for commercial purposes; this airship to be built for the Air Ministry, subject to the proviso that the constructing firm may repurchase at a stated (reduced) price if they propose to employ it on a commercial airship service approved by the Air Ministry.

The total expenditure on the combined scheme over this and the next two financial years is provisionally estimated not to exceed £1,350,000 gross or £1,200,000 net, on the assumption that the commercial airship is successful and is taken over by the company for employment on an approved commercial service.

On May 24 the following note was presented by the Secretary of State for Air on the principal provisions of a contract for an experimental rigid commercial airship, which it is proposed to offer to the Airship Guarantee Co., Ltd.

The draft contract with the Airship Guarantee Co. provides for the construction of an airship to conform with an outline of requirements drawn up by the Air Ministry, and with principles of airworthiness laid down by the Aeronautical

Research Committee. Subject to these conditions, the company are to have a free hand in the design and execution of the work, which will, however, be inspected during progress by the Ministry for material, workmanship and conformity of design to the requirements of airworthiness. The prescribed trials will include both (1) tests in Great Britain, and (2) a voyage to India. The Ministry will endeavour to provide facilities for the embarkation of the company's personnel for training. The price agreed for the airship is £300,000, to be paid in instalments, the first (of £100,000) immediately on the signing of the contract. A further initial payment of £50,000 will be made as a contribution to the contractors' capital expenditure, the total cost to the Government being £350,000 in all. The first six instalments paid for the ship, amounting to £250,000 (as distinct from the £50,000 contribution above-mentioned), are to be repaid should the ship, before the flight trials take place, fail to satisfy certain vital conditions. Should the ship satisfy these vital conditions, but not carry out the flight trials successfully, the remaining £50,000 will be withheld in whole or part, according as the performance approximates to requirements.

The more important requirements are:—

- (1) The gas capacity not to be less than 5,000,000 cubic ft.
- (2) A speed of not less than 70 m.p.h. at 5,000 ft. altitude to be attained on flight trials.
- (3) The total fixed weights not to exceed 90 tons.
- (4) Navigability to be possible within certain specified angles of pitch.
- (5) The ship to comply with general requirements for airworthiness specified by the Aeronautical Research Committee.

Securities for the execution of the contract by the contractors are to be provided by means of sureties approved by the Ministry. The company may subsequently repurchase the airship from the Ministry for use on an approved British airship transport service, at half the price of the ship, i.e., £150,000.

Provision is made for the free exchange between the Ministry and the contractors of any technical information relating to airship construction.

The designs owned by the contractors will remain their own property, but will be communicated to the Ministry. Patents owned by the contractors will be available for Crown use in accordance with the Patents and Designs Acts; non-patentable designs and drawings will be treated by the Ministry on the same lines as actual patents, i.e., they will not be used except on payment of sums determined by agreement, or in default of agreement by arbitration.

ROYAL AERONAUTICAL SOCIETY

(Official Notices)



Silver Medal.—The Council have awarded the Royal Aeronautical Society's Silver Medal for the year to Squadron Leader R. M. Hill, A.F.C., A.F.R.Ae.S., R.A.F., for his paper on "The Manœuvres of Inverted Flight" published in *The Journal of the Royal Aeronautical Society*, for December, 1923.

Edward Busk Memorial Prize Regulations.—From the income of the above fund, a sum of twenty guineas will be offered as a prize for

the best paper received by the Royal Aeronautical Society on some subject of a technical nature in connection with aeroplanes (including seaplanes). The prize is open to international competition. The Royal Aeronautical Society retains the right to withhold the prize in any year if it is considered that no paper is of sufficient merit to justify an award.

Intending competitors should send their names to the Secretary of the Royal Aeronautical Society, 7, Albemarle Street, London, W. 1, on or before September 30, 1924, with such information in regard to the projected scope of their papers as will enable arrangements to be made for their

examination. The closing date for the receipt of papers will be December 31, 1924.

Papers, which must be submitted in either French or English, should in all cases be typed, and a copy should be retained by the author, as the Society can take no responsibility for the loss of copies submitted to it. Successful papers will become the absolute property of the Society, and will in most instances be published in *The Journal of the Royal Aeronautical Society*. A signed undertaking must accompany each paper to the effect that publication has not already taken place, and that the author will not communicate it elsewhere until the Society's award is published.

The Society attaches special importance to papers showing original work, and due acknowledgment must be made by the author of the source of any special information.

Edward Teshmaker Busk was the designer of the first stable aeroplane (the R.E.1), and was killed on this machine through it catching fire in the air at South Farnborough on November 5, 1914.

W. LOCKWOOD MARSH,

Secretary

The Wilbur Wright Lecture

ON Thursday evening last, May 29, Lieut.-Col. H. T. Tizard delivered the Wilbur Wright Lecture before the Royal Aeronautical Society. His subject, "Fuel Economy in Flight," was one of some considerable importance, and the

paper itself being full of interesting matter, we would like to report this lecture fully. This week, however, owing to our Prague Aero Show Report, we are unable to find the space to do so, and are therefore forced to hold this over until a future occasion.

AERIAL TRANSPORT*

By COL. W. A. BRISTOW

In the beginning of his paper Col. Bristow referred to the first Continental air services started by Mr. Holt Thomas, Handley Page Co., Instone Air Line, De Havilland Co., and Daimler Airways, which, he pointed out, apparently gave little return for the vast expenditure. From the national point of view, however, he thought the money was well spent, for it enabled us for the first time to catalogue the manifold difficulties that stood in the way of aerial transport. In his opinion, one of the most important services they had rendered had been to increase our knowledge of the inherent and practical difficulties still to be surmounted, although very valuable work had also been done with regard to their amelioration.

A consideration of the results could be divided into two parts—commercial and technical—but these being mutually dependent rendered any hard-and-fast division impossible. Reviewing the lessons of the first category, the most important arose out of the difficulties due to the wide seasonal fluctuation in the amount of traffic—it being possible in the summer to run regular daily services without a break, while the winter showed a lamentable state of affairs. Col. Bristow then gave a table showing the numbers of passengers carried by the various British and foreign companies on the London-Continental services over a period commencing May 1, 1921. The total number of passengers carried per year was stated as follows: May 1 to April 30, 1921, 11,131; same period, 1922-3, 14,365; ditto, 1923-4, 14,301—total, 39,797. Col. Bristow pointed out that these figures alone

a three-fold character: (1) There were not nearly so many 1st-class Continental passengers in the winter as in summer; (2) Some would not go by air in the winter owing to the unreliability of the services and the greater risks involved. (3) Owing to weather and shortness in daylight in winter, the companies often had to refuse passengers. It was not, said Col. Bristow, easy to see a remedy for (1), and minor difficulties in (2) and (3) would only gradually be surmounted as the services were made more reliable and safe in winter. In his opinion, it was essential to combine the carrying of freight and passengers to obtain a reasonable chance of success. Air companies had had an objection to handling freight—now entirely groundless. In the main it had been necessary to depend on a multiplicity of small articles, collected and delivered by the company the same day. Unfortunately this did not pay, as the cost of running about with vans all over London and Paris collecting and delivering small articles absorbed almost the whole of the takings.

About a year ago, however, the author continued, the Instone Air Line gave the freight business another trial on a new basis. They offered to carry freight from aerodrome to aerodrome only, and further did not guarantee to carry it all in one day, but undertook it should go in three days at the most. All classes of trades seized the opportunity, and often the only difficulty was to prevent traffic assuming such proportions that it could not be handled. Here followed a table giving the passenger and freight returns for the 12 months ending January 31, 1924, on the London, Brussels, Cologne services. Looking at the passenger figures only, this table showed that the passengers carried in July were 507, and in December, 39, a ratio of 13:1, whilst the weight of goods carried showed an increase until November. Converting the weight of goods into the equivalent of passengers, however, it was found that August became the busiest month with 1,004, and December the worst with 253, a ratio of 4:1 instead of 13:1.

While it was true that much of this freight traffic was carried at less rate per pound than passengers were carried, much of it was utilised to fill machines up to total weight after allowing for passenger load. It was the author's opinion, therefore, that aerial transport could not be a success commercially with the traffic restricted to a widely varying stream of passengers only, but by combining freight traffic it provided winter loads for otherwise idle aeroplanes.

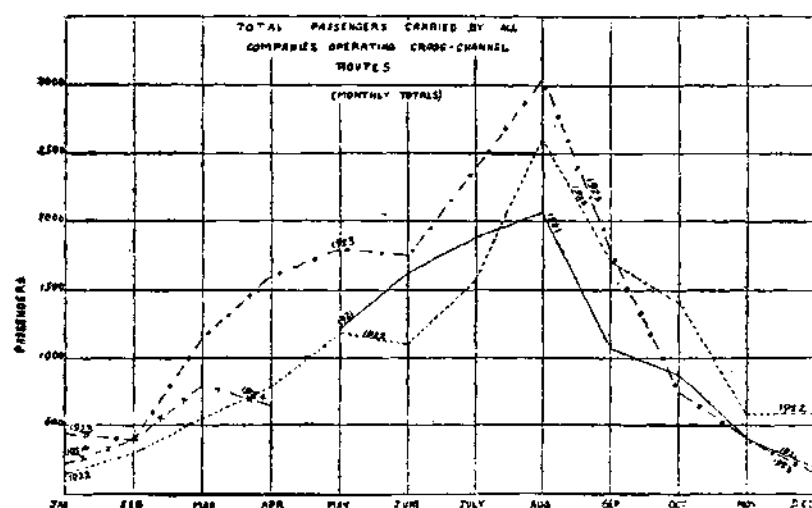
Col. Bristow said he thought goods traffic would resolve into two classes:—(a) Comparatively small and urgent consignments, used as make-weight on the 100 m.p.h. passenger machines.

(b) Bulky packages and large lots, to be carried in special freight machines having a cruising speed of about 70 m.p.h.

The author next touched upon the matter of bad weather, and referred to the extra safety afforded by three-engined machines in cases of engine failure. In dealing with the question of insurance he stated it would appear preferable to substitute some system which, whilst being fair to the underwriters, would not augment so seriously the cost per mile in slacker months. If, he said, premiums could be quoted upon a trip basis, the transport companies would know exactly what the cost per mile was likely to be, and the insurance company would have the satisfaction of knowing that they were drawing premiums in respect to every occasion upon which they were on risk. He thought, if there were a reasonable number of machines to be insured, a rate of 10d. per cent. per trip of 300 miles would work out fairly.

In examining the various causes that contributed to the high cost of running, the author summarised these as follows: (1) The high speed at which the traffic is carried. (2) The small proportion of paying load relative to the horse-power required. (3) The highly-stressed and expensive character of the engine and the high cost of fuel. (4) The non-permanent character of the aircraft structure. (5) High "trip" costs relative to the size of the loads carried. (6) The rate of reserve at present necessary for depreciation and obsolescence.

Col. Bristow then dealt with each of the above items in detail. In the question of speed he pointed out that while a speed of 60 m.p.h. would show to great advantage compared with other means of transport, the fact of having to face head winds of 20-30 m.p.h. over long journeys called for a cruising speed of at least 100 m.p.h. This speed had, in



were rather misleading, as no account was taken of the enormous increase in the goods traffic.

A comparison of the summer figures, he said, would give a fairer indication of the popularity of air travel. These were, from March to September, 1922, 9,479; 1923, 13,577, an increase of 4,098, or 44 per cent. The passenger returns for the three years have been plotted in the accompanying chart, and although these may from one point of view be deemed most encouraging, the author points out that from the commercial standpoint the difficulty of economic operation continually increases, and shows signs of becoming worse. For instance, the maximum and minimum monthly figures for passengers were as follows:—

	1921-2.	1922-3.	1923-4.
Max. (Aug.) ..	2,064	2,591	3,049
Min. (Jan./Feb.) ..	144	413	413
Difference ..	1,920	2,178	2,636

which showed that the peak load was increasing. Col. Bristow gave as an example the following instance in the case of the Handley Page Co. In August, 1923, each of their six pilots carried on an average 251 passengers. The basic pay for the month averaged about £42 (apart from flying pay), or about 3s. 4d. each passenger. In January, 1924, the same pilots carried on an average of 16 passengers each, making the cost per passenger £2 12s. 6d. Pilots received 10s. per hour flying pay, so that lower load factors in winter involved an addition to the already enormous difference. Col. Bristow then showed that the same applied in connection with the ground staff and similarly in the question of insurance.

The causes for this ever-increasing peak were mainly of

* Extracts from a paper read at the Institute of Transport Congress, Bristol, May 30, 1924.

certain cases, already been attained in commercial aircraft, but he stated that from the standpoint of aerodynamical efficiency commercial aircraft were a long way behind some other machines, and the problems involved in cutting down resistance needed a thorough examination. The type of wing used, the shape of the body, the interaction of propeller and body and its important effect on the effective thrust, the cutting down of the resistance offered by the necessary engine-cooling system, and the elimination as far as possible of struts and wires, were all points calling for most careful consideration and treatment.

Referring to the proportion of paying load to horse-power—which he gave as 4 lbs./h.p.—Col. Bristow indicated that a saving in the weight of the engine and/or structure of only 1 lb. per h.p. would add no less than 25 per cent. to the paying load, provided the alteration did not adversely affect the flying qualities of the machine. He then dealt with the problem of producing suitable engines having low weight per h.p. combined with long life, and also referred to the question of radial v. "in-line" or Vee, and to water and air-cooled engines. In connection with the latter he said he thought air-cooled engines seemed to offer certain advantages for commercial work, and that the present considerable rate of progress in the design of air-cooled radials might result in the production of an engine that would permit of an addition to the meagre paying load of 4 lbs. per h.p.

The weight of the structure of the aeroplane, he continued, must also be attacked. The utilisation of metal, especially duralumin, in conjunction with the cantilever monoplane might, he thought, be expected to result in a definite saving of weight. There was also some hope that further research might lead to the development of a type of high-lift wing, perhaps in conjunction with some form of flaps or slots, that would enable the total load per h.p. to be increased. The Fairey and De Havilland wing flaps might lead to a distinct improvement in this respect.

He thought there were good grounds for hoping that, in a few years, we would have machines, perhaps of the all-metal cantilever monoplane type, with wings of some type that would allow a maximum load of 20 lbs. per h.p. and a paying load of 6½ lbs. per h.p. Fitted with three engines each of 500 b.h.p. and weighing about 1½ lbs. per b.h.p., such a machine would have a total paying load of almost 10,000 lbs. or 50 passengers with luggage. If the engines were fitted with two-speed gears or variable pitch propellers the problem of getting off with this loading would be simplified and the all-round performance should be at least as good or even better than that of any commercial machine we had today.

Col. Bristow next set forth some of the causes of the present high costs, together with brief notes as to the means that might be adopted for obtaining a reduction in the expenditure.

Dealing with the cost of fuel—which he quoted at about 6d. per mile for an 8-seater machine—Col. Bristow referred to the promising field for development in the direction of the stratified charge and the work done in this connection by Mr. Ricardo. He also referred to the "Bi-fuel" system—in which the carburettor had two jets, the main delivering petrol in the ordinary manner, and the second, delivering alcohol from a small auxiliary tank, being drawn upon automatically when the compression pressure reached a pre-determined figure—and to the possibilities of crude oil.

Under the heading of the non-permanent character of the aircraft structure, Col. Bristow touched upon the question of metal construction, with reference to the work carried out by Messrs. Boulton and Paul, Armstrong-Siddeley, and the Bristol Aeroplane Company.

On the matter of high trip costs, he gave the opinion that machines must be increased in size in order to spread all the

various charges over a greater load. Now that wireless telephony was in a more advanced state, it might, he said, pay a large company to buy its apparatus and undertake its upkeep—little profit, if any, had been made by Messrs. Marconi in return for the excellent service they had given. The "housing" problem for aeroplanes was also mentioned by the author, who suggested that the machines should be housed on the edge of the aerodrome, and a raised hot and cold water tank provided close at hand delivering softened water direct to the radiators. A similar provision should be made for filling up with oil, thus facilitating the starting up of the engine and saving time and petrol.

In connection with depreciation and obsolescence Col. Bristow stated that past experience indicated a reserve of 30 per cent. per annum on the total value of the machines and engines was not too high in respect to these factors. Dealing first with obsolescence, it was obvious that, for some time to come, this must remain a serious factor, as, with every new type of apparatus, it was usually many years before the rate of improvement slowed down sufficiently to enable the obsolescence to be completely overshadowed by depreciation.

Speaking generally of European aerial transport companies, it could be said that, in some respects, all their machines were obsolete, i.e., it was possible to build today very much better machines, safer, carrying more useful load and cheaper to run. Machines should, therefore, when ordered, embody as far as possible all the latest sound and tried-out ideas and improvements which are most likely to coincide with the future trend of development. He did not mean by this that they should be of a semi-experimental character.

During the next few years the rate of reserve necessary to cover obsolescence would depend mainly upon two factors, the rate of progress in design and the prevision shown in the ordering of machines. The latter factor would probably have the most effect on the result. The question of depreciation was, he pointed out, closely interwoven with that of maintenance.

Concluding, Colonel Bristow said a summary of the various factors appeared to reveal the following position:—

1. That, in 1923, the seven months' spring and summer passenger traffic showed an increase of 44 per cent. over that of the same period in 1922, and other facts confirmed that the public were quite willing to travel by air.
2. That, at both ends of the year, various causes combined to reduce the traffic to such extremely attenuated proportions that the cost of handling it was increased to an extent that could be borne.
3. That the causes of this seasonal shrinkage of the passenger traffic were almost impossible of removal, at all events in the next few years.
4. That it would, therefore, appear essential to build up the freight traffic in order to provide a more constant load for the whole year.
5. That already a few months' experiment, which was not quoted as being altogether conclusive, had shown that there was a considerable demand for the aerial transport of freight, the carrying of which did much to ease the difficulties of the position.
6. That, even if the traffic is available in a steady stream, it would be next to impossible to carry it on a profitable basis until aeroplanes could carry more than 4 lbs. of paying load per b.h.p. of power-plant installed.
7. That improvements were already in sight by which this paying load margin could be increased.
8. That both engines and aeroplanes could and would be made more suitable for commercial purposes during the next five years, and that the machines by that time might be radically different in many respects to those of today.

At Buckingham Palace State Ball

THE following were present at the State Ball given by the King and Queen at Buckingham Palace on May 28:—Air Chief Marshal Sir H. M. Trenchard, Wing Commander Louis Greig, Lieutenant Aviateur Chevalier Willy Coppens, Capitaine de Corvette Sablé, Captain Silvio Scaroni, Commander Don Egardo von Schroeders, Captain Juan Leguia y Swayne, the Rt. Hon. Lord Thomson, Secretary of State for Air, Air Marshal Sir Godfrey Paine, Air Marshal Sir W. H. G. Salmond, Air Commodore A. E. Borton, Air Commodore T. I. Webb Bowen, Air Commodore H. C. T. Dowd-ling, Air Commodore F. C. Halahan, Air Commodore T. C. R. Higgins, Air Commodore E. A. D. Masterman, Air Commodore D. Munro, Air Commodore C. R. Samson, Group Capt. F. V. Holt, Group Capt. C. L. N. Newall, Flight Lieut. C. M. E. Gifford, Flying Officer E. A. C. Britton, Flying Officer P. Harris, Flying Officer O. J. F. Jones-Lloyd, Flying Officer A. H. Paull, etc.

At the Levee

THE following were amongst those present at the levee held by His Majesty the King on June 2 at St. James's Palace: Air Chief Marshal Sir Hugh Trenchard, Principal Air Aide-de-Camp; the Rt. Hon. Lord Thomson, Secretary of State for Air; Air Vice-Marshal Sir W. S. Brancker; Maj.-General E. Ashmore, C.B., C.M.G., M.V.O., General Officer Commanding Territorial Army Air Defence Brigades; Group Capt. C. L. N. Newall, Sqdn. Ldr. E. B. Beauman, Wing Commander J. B. Bowen, O.B.E., Sqdn. Ldr. W. B. Callaway, the Rev. S. L. Clarke, Chaplain, R.A.F., Pilot Officer C. K. Coggle, the Rev. J. F. Cox, B.A., Chaplain, R.A.F., the Rev. T. Crick, M.V.O., M.A., R.N., Chaplain, R.A.F., Flying Officer C. A. Goatcher, Air Commodore F. C. Halahan, C.M.G., C.B.E., D.S.O., M.V.O., Sqdn. Ldr. R. Leslie, D.S.C., D.F.C., A.F.C., Flight Lieut. P. Mackworth, D.F.C., Wing Commander J. Smyth-Pigott, D.S.O., Sqdn. Ldr. N. C. Spratt, Flight Lieut. C. Potts, etc.

IN PARLIAMENT

The Airship Scheme

IN Parliament on May 28 the House went into Committee of Supply. On the Supplementary Vote of £350,000 for technical and warlike stores for the Air Force, including Experimental and Research Services,

Mr. Leach, Under-Secretary for Air, in supporting the Estimates, briefly summarised the happenings during the past few years following the War whereby matters of the air had fallen into a moribund condition. He said that the development of the lighter-than-air ship had been disappointing. After the War, when the general slump began, plant, ships and material were offered free to anybody who would go on with a scheme of development. Not a single offer was forthcoming. Efforts were also made to enlist the interest of the Dominions, but these came to naught. No one seemed able to afford the large expenditure which was necessary before any development became sufficiently promising. So for three or four years they had done nothing except that the research department had been accumulating knowledge. Throughout these years, however, Commander Burney, the member for Uxbridge, had displayed considerable faith in lighter-than-air travel, and he had kept alive the flame which would otherwise have been extinguished. Mr. Leach then proceeded to discuss in detail the Burney airship scheme, which was recently rejected by the Government, and repeated many of the details which were contained in Lord Thomson's speech on May 21 in the House of Lords on the Airship proposals, and reported in *FLIGHT* last week. In the opinion of the experts the initial stages of the Burney scheme had not been well thought out, and for this and various other reasons it had been turned down. The experience of every country showed the need for a good deal of research work before an effective airship, capable of travelling a long distance, could be regarded as a sound problem. The Government proposed to begin with research and experiments at Cardington. They would, first of all, recondition one of their existing ships for research purposes, and they would, at an early date, proceed with the building of a new airship of 5,000,000 cubic feet capacity. They would construct overseas the necessary intermediate and terminal bases to enable the two ships—one built by them and one by the contractors—to fly with safety between here and India. He would rather not say at the present time where those bases were to be built. The contract for the building of the second airship was, he understood, ready for signature as soon as the House agreed to let it go through. The total cost was £350,000. The whole scheme involved a three-years' programme and a gross expenditure of £1,350,000, or allowing for the purchase of the airship provided by the contractors, £1,200,000. The question of technical staff and of expert research workers had been fully explored, and the Ministry were satisfied that, in this respect, they were properly and fully equipped. His Department might be said to be straining at the leash. They were looking for successful achievement in opening up a new era in Dominion relationship, because communications between our blood relations overseas would be put on a closer basis than they had ever been put before. The Dominion aspect of the scheme was a bright and alluring part of it. The prospect of reaching India in five days, followed by that of reaching Australia in 10 or 12 days, was surely sufficient to allow them to take a few risks. And in commerce, if this development proved successful, as he was confident it might, there were tremendous possibilities ahead.

Lieut.-Commander Kenworthy: How long a period is expected to elapse before we have the first ship able to make the first voyage to India?

Mr. Leach: The outside period is three years, but I am pretty confident it will be less.

Sir S. Hoare said Unionist members had noticed the progress which the Under-Secretary for Air had made. Today the hon. gentleman came before them, not only as a full-blooded Imperialist, but as a full-blooded militarist as well. He was doing what he himself (Sir S. Hoare) would never have ventured to do—asking the Committee to agree to the building of a military airship by direct labour for the Government. The scheme of the late Government was a commercial scheme. The sole original contribution of the present Government to the development of British aviation was the building of a military airship that the late militarist Conservative Government would never have dreamed of proposing. The Under-Secretary had given an account of the late Government's scheme which was a travesty of it. Under that scheme it was proposed to make a loan, without interest, at the rate of £400,000 a year for seven years, to be repayable out of subsequent profits. At the end of that period they had hoped there would be six large airships working upon a commercial service between England and India, and were prepared to make fee payments based on actual results to the extent of £250,000 a year for eight years. As a guarantee of the stability and good faith of the company it was insisted that £500,000 should be subscribed by private investors. That scheme was not a monopoly, and if it had succeeded he felt sure that there would have been a large amount of competition. When he was Secretary of State for Air no criticism was made of the Burney scheme by any expert in the Air Ministry. If the scheme had failed the country's commitments were strictly limited to the three periods, and the Government could have cut their losses after the expenditure of the first £400,000. On the other hand, if it had succeeded, compared with the meagre result described in the Government's White Paper, there would have been a minimum of six great airships running on commercial lines between India and this country. The object of the late Government was to see whether airships were a practical commercial proposition or not by an actual experiment.

He claimed that the present Government's scheme was likely to be much more expensive than that of the late Government. The latter had looked ahead to what would happen in seven or 15 years' time, but so far as he could see the present Government had no ultimate object in view, and at the end of the three years' period they would be little further forward. There were in the Air Ministry very few officials who knew anything about airships, and they would therefore have to create a great airship department and set up a big Government organisation for the building of a single airship. They were going to have a gigantic organisation in Whitehall for the building of a single airship, and what appeared to be no less dangerous, a new construction organisation at Cardington. What did the Government intend when the experimental period was over? Had they worked out an ultimate policy beyond that time, and did they contemplate operating a commercial service?

The Government scheme was likely to be more expensive and less efficient in developing our airship service than that for which the late Government were responsible. The Government were building a military airship when a commercial experiment was needed. They were setting up two separate organisations, when one would do the work much better. As a result of their scheme the efforts of the Ministers and the experts at the Air Ministry would be dissipated, when they would have been much better engaged in developing a home defence scheme and in ensuring a quick supply of the best engines and machines in the world.

Lieut.-Commander Kenworthy said the House and the whole Empire ought to show some gratitude to Commander Burney for having kept this question alive almost alone and unaided. He was very sceptical about the ultimate value of airships, either for commercial or military purposes, and the House and the country seemed particularly indifferent on the subject. The Government's scheme comprised a little bit of State Socialism and a little bit of private enterprise, and would result in their getting the worst of both

possible worlds. He thought the money proposed to be spent on airships could be much better used in other aerial directions, and services to India and to Australia by aeroplane could be instituted with much less expenditure.

Mr. Nichol said the Government were to be congratulated on turning down the Burney scheme. At the same time, he thought that the money asked for today could be better spent on the lines suggested by Lieut.-Commander Kenworthy than on airship development.

Sir P. Sassoon said that they had in the Government scheme the first fruits of constructive Socialism—the nationalisation of the means of production and distribution—and they could note the cost of it. The Government were paying £600,000 and, perhaps, £675,000 for an airship which private enterprise could provide for £400,000. It was not fair to compare the total cost of the Burney scheme with the initial expenditure of the Government on their experiment. How much would the Government scheme cost if it was carried out to the full on Socialistic lines? He hoped that in courting failure, as the Government were doing in going on with this scheme, they would not put back air construction for an indefinite period.

Rear-Admiral Sueter said that valuable work was done by airships during the War in patrolling and scouting. He agreed that the Burney group scheme involved a monopoly, and the Government were quite right in not granting a monopoly. In the early days of submarines we gave a monopoly to a firm which built submarines, and we should have been much more advanced in submarine development if we had not done so. The Burney scheme failed in the mooring arrangements. Wherever an airship was stationed a hangar was needed as well as a mast. The Government scheme he criticised as not going far enough. He advocated experiments by sending a complete section of an airship to India with its gas-bag, hydrogen to inflate it, and go into the whole question in the country where the airships would be sent. He hoped that a committee would be set up to investigate the whole question of helium, training of pilots, etc.

Major-General Seely said he thought they had better see whether this great ship worked before they went in for further ones. He would like to know how far the experiments had been carried in regard to the possibilities of mooring these big vessels in considerable gales of wind. The cost of having a string of hangars between this country and India was prohibitive, and therefore he suggested that they should provide an adequate number of mooring masts. He was very glad that the Government had decided to go on in the matter of airships, and if they found that these two ships were successful he urged that they should proceed further so that we might gain the supremacy in lighter-than-air craft which we had been in danger of losing.

Captain Brass said he had no very great faith in airships. He would rather see the money spent on heavier-than-air machines. It would be better to try to develop the flying boat which would be easier and safer to land.

Mr. Wells welcomed the fact that the Government had recognised the necessity for airships.

Mr. Amery, referring to the advantages of an Imperial air ship service, said it would be possible to convene rapidly a conference of Dominion Premiers to deal immediately with any important question that arose, and it would afford people in this country an opportunity of seeing the Empire within a very short period. The airship in future might be used in emergency for the rapid conveyance of troops and for carrying aeroplanes, but its real value would be its services in reconnaissance for the Navy over the great ocean spaces. From the point of view of defence they required not six but 60 or 600 commercial airships, to be of real use, and it was from that point of view that they must judge any scheme put before the House. What was the policy of the Government? Was it to build one ship at this great expense, or was it one of turning out ship after ship as rapidly as possible? Did they mean to turn out great fleets of military airships or great fleets of commercial ships? If the former, how did they propose to man them, and if the latter, what commercial service were they going to organise all over the world? Would the intermediate station, from the point of view of commercial traffic, and, some day, of naval work, necessarily be on British territory? Would the Under-Secretary assure the Committee that in the construction of these ships in all the experiments that were carried out, and in the placing of the intermediate stations, the Air Ministry were going to co-operate in the closest manner with the Admiralty and secure the approval and concurrence of the Admiralty in all the arrangements they made? He hoped the Government would tell them at the earliest possible moment what they really had in view. Were they in favour of commercial airship development, or were they building a great fleet for he did not know what military purpose?

Mr. Leach, in the course of his reply, said that Mr. Amery asked for information as to where they were going, what was to be the nature of their policy, what they visualised years ahead. He could not tell yet. They were in the position of looking at an industry which was more or less dead and which they wanted to put on its feet again if it was at all possible. The airship industry had had a chequered past; there was no complete certainty about the security of its future. Commander Burney, who had examined the problem with a good deal of care and a lot of enthusiasm, had come to the conclusion that airships were going to be a practical proposition for the benefit and comfort of mankind. The hon. and gallant member might be right, and the Government were making it their business to initiate experiments for the purpose of seeing whether he was right. He believed that the hon. and gallant member would turn out to be right, and he was content to ask the Committee to grant this money for the purpose of making this experiment. They were going to build one airship for commercial passenger work and another for Service purposes. Surely that was a sensible method of making the experiment. The six ships of the Burney scheme would take seven years to provide whereas the three ships under the Government scheme—two new ships and one reconditioned ship—were to be provided inside three years. He would like to see the need for military airships disappear, but as long as the need existed the Government would pay attention to it. He had been asked whether the Government were going to conduct a passenger service to India when the passenger ship had been built. The first intention was to offer that undertaking to the contractors, but if they were not prepared to carry it on he dared say the Government might feel that it was in the position of having to conduct that service itself. He was not, however, authorised to say that the Government would run this passenger service. The cost of an airship shed was estimated at about £100,000, but when they added the cost of gas plant, general equipment, and a mooring mast, the cost would be more like a quarter of a million.

The Vote was agreed to.

Air "Death Ray"

Lieut.-Commander Kenworthy, on May 28, asked the Under-Secretary of State for Air whether he can now make any statement relative to the invention known as the death ray?

The Under-Secretary of State for Air (Mr. Leach): The official statement issued to the Press yesterday contains the essential facts as regards the invention of the so-called death ray. Mr. Grindell Matthews was offered and refused an opportunity to demonstrate his invention under conditions which would satisfy either scientists or business men. I wish to assure the House that every facility has been afforded to Mr. Grindell Matthews to give a demonstration under conditions satisfactory to himself and to the Services.

The Departments have been placed in a difficult position in dealing with Mr. Grindell Matthews, partly because of the vigorous Press campaign which has been conducted on behalf of this gentleman and partly because this is not the first occasion on which this inventor has put forward schemes for which extravagant claims have been made. As a result, the Departments are unable to accept Mr. Grindell Matthews' statements in regard to this invention without a scrutiny which, apparently, he is not prepared to face.

Lieut.-Commander Kenworthy: Was this gentleman not paid £25,000 by the Admiralty for an invention to direct vessels by wireless, and were the Admiralty exactly throwing money away then?

Mr. Leach: I cannot answer for another Department, but at any rate that took place before we accepted office.

Lieut.-Commander Kenworthy: Are the Government quite certain that there is no value in this invention, and, if so, are they taking any steps to prevent it going into other hands outside this country?

Mr. Leach: We are not in a position to pass judgment on the value of this ray, because we have not been allowed to make proper tests of it. Therefore, whether there is anything in it or not is a matter which remains unexplored.

Commander Bellairs: Are there not several other claimants to an invention of a similar description? Why is this particular investigation being confined to the Air Ministry and not to the other fighting Services, since they have much greater experience in dealing with these matters?

Mr. W. Thorne: If there is any substance in this invention, how is it that, according to the newspapers, some steps have been taken to prevent this individual selling this particular invention to France?

Viscount Curzon: Is it not a fact that we have in use in the Air Force today an invention which will do all that Mr. Grindell Matthews was able to do in the course of his experiments the other day?

Mr. Leach: In reply to the last question, every phenomenon produced by Mr. Grindell Matthews at this trial can readily be reproduced by the people in our Department, but that does not say there is anything of value in the phenomenon. In reply to the other question, all three Departments were joined in the investigation conducted at the laboratory of Mr. Grindell Matthews, and their opinion was unanimous on the matter. I cannot, of course, say much in favour of the romantic-minded public, which is inclined to take too much notice of a Press campaign, because that phenomenon is too frequent.

Flying Pageant at Hendon

SIR H. BRITAIN, on May 22, asked the Under-Secretary of State for Air what opportunities have been arranged by the Air Force for Dominion visitors to see something of that arm of the Service during the period of the British Empire Exhibition?

Mr. Leach: It has not been possible, in the absence of a suitable aerodrome, to arrange for a flying display at Wembley itself, but Hendon is not very far distant, and I hope that visitors from the Dominions will take advantage of the opportunity of the Pageant which is to be held there on June 28 to see something of the Royal Air Force at work.

Sir H. Brittain: Is it not a fact that the hon. gentleman has arranged for special displays by the Air Force for specific groups of Dominion visitors?

Air Treaty (Czechoslovakia)

MR. HANNON asked whether it is the intention of His Majesty's Government to renew the provisional Air Treaty between the British and Czechoslovakian Governments for the establishment of an air line between London and Prague which expired on March 31; and, if not, whether it is proposed to conclude any other arrangement with the Czechoslovakian Government in this respect?

Mr. Leach: It is the intention of the Government to enter into a permanent air agreement with Czechoslovakia as soon as it appears that the difficulties to which I referred in my reply to the hon. and gallant member for Central Hull on May 1 are likely to be removed.

Mr. Ormsby-Gore: Do the German Government still adhere to the view they then took?

Mr. Leach: Yes; negotiations are in progress.

Mr. B. Turner: When is the Government going to take up the policy of stopping this hellish campaign of competition in air services in warfare?

Aeroplanes (Maximum Speed)

VISCOUNT CURZON asked the Under-Secretary of State for Air what is the maximum air speed for the fastest fighting aeroplane in the service of the British, French, American, Italian and Japanese Air Forces?

Mr. Leach: It is undesirable to publish comparisons between the relative performances of British and foreign fighting aircraft.

Viscount Curzon: Is the hon. Gentleman aware that the machine used by the young French officer who is attempting to fly round the world is faster than any machine we have got in our service by more than 25 miles an hour?

Mr. Leach: The whole matter is receiving our very careful attention.

Burney Airship Scheme

VISCOUNT CURZON, on May 26, asked the Prime Minister whether he is aware that the Burney airship scheme received the approval of the recent Imperial Conference; and whether, before arriving at a decision to abandon it, the Dominions were consulted in the matter?

The Lord Privy Seal (Mr. Clynes): The only resolution passed by the Imperial Conference in this regard was that His Majesty's Government should circulate regular up-to-date information respecting the progress of this scheme in order that consideration of Empire participation might be facilitated. The necessary steps are being taken to this end. In these circumstances the second part of the question does not arise.

Viscount Curzon: Do I understand from the answer of the right hon. gentleman that the Dominions were or were not consulted before the Government decision was arrived at?

Mr. Clynes: My answer to the first part of the member's question obviates the second part arising.

Aeroplanes' Landing Places

LIEUT.-COMMANDER KENWORTHY, on May 29, asked the Under-Secretary of State for Air what steps he is taking to increase the number of suitable landing-places for aeroplanes; whether there are any arrangements for utilising racecourses, recreation fields, golf-courses, etc., for this purpose; and whether he will consider, or has considered, the paying of a small subsidy to the owners of such spaces who will keep a certain area clear of obstacles and provide wind-cones to indicate the wind direction near the ground?

The Under-Secretary of State for Air (Mr. Leach): The subject of the hon. and gallant member's question is receiving the fullest consideration in connection with the scheme for the air defence of Great Britain, and it has already been examined by an Inter-Departmental Committee which is dealing with the home defence organisation. It is not yet possible to give details of the measures which it is proposed to adopt, but the hon. and gallant member may rest assured that those suggested by him are being given due consideration.

Lieut.-Commander Kenworthy: The hon. gentleman says this is being considered from the point of view of home defence. Is it also being considered from the point of view of commercial aviation and aviation for pleasure?

Mr. Leach: Yes, that is so.



THE GREAT "B.P." AT WEMBLEY: This characteristic and beautiful pavilion—or "khan," as it would be known in Persia—contains an interesting and comprehensive exhibit showing various processes and stages in the manufacture of "B.P." motor spirit and other products of the Anglo-Persian Oil Co., Ltd. (with which is associated the British Petroleum Co., Ltd.). The "B.P." tank-wagon in the foreground is used for distributing fuel oil to the Engineering Building and other power plants in the Exhibition grounds.

THE ROYAL AIR FORCE

London Gazette, May 23, 1924

The award by His Majesty the King, of the Air Force Cross to Lieut.-Comdr. (Act. Comdr.) K. M. Mackenzie-Grieve, Royal Navy, and to Mr. H. G. Hawker, on May 28, 1919, in recognition of their distinguished services to aviation, is hereby published in accordance with the 19th ordinance of the warrant instituting the Air Force Cross.

Wing Comdr. A. H. Jackson is appointed Provost-Marshal and Chief of the Air Force Police (May 12) (Vice Squadron-Leader L. L. MacLean).

London Gazette, May 27, 1924

General Duties Branch

Wing Commander R. G. Blomfield, D.S.O., is placed on retired list; May 4. Flight Lieut. L. J. Killmayer, M.B.E., is granted rank of Sqdn. Leader on retirement; May 14. Flying Officer D. S. Buchanan relinquishes his short service commission on account of ill-health, and is permitted to retain his rank; May 28.

Stores Branch

R. G. A. Vallance is granted a permanent commn. as Pilot Officer on probation with effect from and with seny. of May 19.

The follg. are transferred to the Stores Branch on probation from the General Duties Branch, in ranks stated, with effect from and with seny. of May 19:—*Flight Lieuts.*—G. C. Anne, O.B.E. (Capt., K.O.Y.L.I.); J. S.

Browne, A.F.C.; F. H. Sims; H. E. Tansley, M.C. (Lieut., Cheshire Regt.). *Flying Officers.*—S. R. L. Poole and A. J. Adams.

Flight Lieut. F. R. Berresford is transferred to the Reserve, Class C; May 28.

Medical Branch

Flight Lieut. S. E. Elphick resigns his permanent commn.; May 16.

Reserve of Air Force Officers

The follg. are granted commns. in the General Duties Branch as Flying Officers on probation; May 27:—*Class A.*—E. Bradley. *Class B.*—S. Hampton.

Flying Officer C. H. Baker is transferred from Class A to Class C; May 27.

The follg. officers are confirmed in rank, with effect from dates indicated:—

Flying Officers.—F. J. Bailey, G. Davis, T. P. Isaac; May 27. *Pilot Officers.*—W. Mullen; May 5. J. Fairbairn; May 6. C. M. Willy; May 10. K. L. Graham; May 13. W. George, A. J. Plummer, W. C. Kilvington; May 27.

London Gazette, May 30, 1924

General Duties Branch

Pilot Offr. A. G. S. Tuke is confirmed in rank; May 6.

Pilot Offr. A. G. S. Johnson is removed from the R.A.F., His Majesty having no further use for his services; May 17.

Gazette, May 20, concerning Flying Offr. F. C. Baker is cancelled.

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Sqdn. Leader.—A/Grp. Capt. H. C. Ellis, C.B.E., to R.A.F. Depot on transfer to Home Estab.; 14.5.24.

Flight Lieuts.—W. Underhill, D.S.C., to No. 216 Sqdn., Egypt; 1.4.24. H. W. L. Saunders, M.C., D.F.C., M.M., to No. 1 Group H.Q., Kidbrooke, on transfer to Home Estab.; 2.6.24. V. R. Gibbs, D.S.C., to No. 9 Sqdn., Manston; 1.4.24.

Flying Offrs.—P. W. Adams, to remain at R.A.F. Depot instead of to Schl. of Balloon Training as previously notified. G. H. Bennett, to R.A.F. Depot, on appointment to a Short Service Commn.; 23.5.24. H. E. F. Saunders, to Admiralty Compass Observatory, Slough; 15.6.24. B. T. Hood, to Schl. of Photography, S. Farnborough; 2.6.24; L. W. H. Phillips, to R.A.F. Base, Leuchars; 2.6.24. R. G. Chapell, to R.A.F. Depot; 5.6.24. M. W. Nolan, to R.A.F. Depot (Non-effective Pool); 1.6.24. J. R. Brown, to R.A.F. Depot (Non-effective Pool), on transfer to Home Estab.; 15.5.24. A. E. Connolly, to No. 99 Sqdn. Bircham Newton; 2.6.24. W. V. Simous, to Armament and Gunnery Schl., Eastchurch; 16.5.24. A. Sattin, to R.A.F. Base, Leuchars (No. 405 Flight); 31.5.24. F. P. Smythies, to R.A.F. Base, Leuchars; 4.6.24.

Stores Branch

Sqdn. Leader.—J. C. E. Gillham, to R.A.F. Depot, on transfer to Home Estab.; 27.4.24.

Flight Lieut.—Actg. Sqdn. Leader F. Binns, M.B.E., (Accountant), to R.A.F. Depot (Non-effective Pool), on transfer to Home Estab.; 8.5.24.

Flying Offr.—R. W. L. Glenn (Accountant), to No. 208 Sqdn., Egypt; 8.5.24.

Medical Branch

Squadron Leader A. J. O. Wigmore, M.B., to No. 3 Group H.Q., Spittlegate; 22.5.24.

Flight Lieutenants: D. G. Boddie, M.B., to No. 2 Flying Training Sch., Duxford; 16.5.24. T. L. P. Harries, M.B., to No. 58 Sqdn., Worthy Down; 20.5.24.

Flight Lieuts.—B. F. Haythornthwaite, M.B., B.A., to No. 20 Sqdn., India; 20.4.24. J. J. Clarke, to Aircraft Depot, India; 24.4.24.

Flying Officers: A. Dickson, M.B., and R. T. F. Grace, M.B., to Research Lab. and Med. Officers' Sch. of Instruction, Hampstead, on appointment to Short Service Comm. for short course; 19.5.24.

Flying Offrs.—E. D. Gray, M.B., M.A., to R.A.F. Depot, on transfer to Home Estab.; 8.5.24. F. S. S. Whiter (Dental), to Headquarters, Cranwell, on appointment to a Temporary Commn.; 23.5.24. W. J. Hutchinson, M.B., to Aircraft Park, India; 24.4.24. F. F. Anslow (Dental), to R.A.F. Depot, on appointment to a Temporary Commn.; 28.5.24.

PERSONALS

Married.

The marriage took place at St. Margaret's, Westminster, on June 2, of Air Marshal Sir JOHN MAITLAND SALMOND, son of Major-General Sir William Salmond and the late Lady Salmond, to the Hon. Monica Grenfell, elder daughter of Lord and Lady Desborough. The Bishop of Norwich officiated, assisted by the Rev. H. Viener, Chief Chaplain, R.A.F., and

the Rev. F. G. A. Phillips, rector of Taplow, and Air Vice-Marshal Sir Geoffrey Salmond was best man to his brother.

Item

LIEUTENANT CHEVALIER WILLY COPPENS, Air Attaché at the Belgian Embassy, is now accredited also to the Embassy in France and has left London for Paris.

MR. GRINDELL MATTHEWS' "DEATH-RAY"

THE Air Ministry makes the following statement regarding the negotiations which have taken place with Mr. Grindell Matthews, the inventor of the so-called Death-Ray, and the action which has been taken to examine the claims put forward by Mr. Grindell Matthews:—

The Air Ministry, as long ago as February last, offered Mr. Grindell Matthews an opportunity to give a demonstration of his apparatus to their representatives, and since that date this invitation has been renewed on several occasions. No arrangements for a demonstration were made, however, by Mr. Grindell Matthews until an interview took place between himself and Air Vice-Marshal Sir Geoffrey Salmond at the Air Ministry on Saturday, May 24. The demonstration, actually proposed by the inventor, and shown on May 26, consisted in lighting an "Osglim" electric lamp, and in stopping at will a small motor-cycle engine from a distance of about 15 yards. The demonstrations were carried out in the inventor's laboratory, all the apparatus being provided and arranged by him. The departmental representatives were shown nothing which would lead them to credit the statements which have appeared in the Press as to the possibilities of the invention, and the conditions under which the demonstrations were made by Mr. Matthews were such that it was not possible to form any definite opinion as to the value of the device. Mr. Matthews was accordingly offered an immediate opportunity to demonstrate the stopping, by means of his ray, of a small petrol motor (such as an ordinary

motor-cycle engine) to be provided by the Government. He was not asked to disclose any information as to the means by which the rays were produced or the nature of the rays themselves. If this test proved successful, he was to be paid £1,000 immediately, the only condition being that he would allow the Government 14 days to consider the basis of further financial negotiations for the purchase or development of his invention. Mr. Grindell Matthews has refused this offer, and it is understood that he has left the country.

In reply to the above official announcement, Mr. Grindell Matthews states it was arranged with Sir Geoffrey Salmond that he should give one demonstration, identical with that given to the French firm, to Major Wimpey, and that upon the latter's report a definite decision would be given as to whether financial negotiations would be forthcoming. Instead, he was asked to give three demonstrations—two being to representatives of the Admiralty and the War Office respectively. He agreed to this and gave the demonstrations. In giving these demonstrations, states Mr. Matthews, he fulfilled his part of the arrangement, and expected the Air Ministry to do the same, but they proposed a further test, and, if the latter was to their satisfaction, a period of 14 days for negotiations. As this meant dropping the French offer on the chance of coming to terms with the Air Ministry, he refused. He did not, he says, refuse to give the Government a further test, but had to decline their offer owing to the restrictions as to time they wished to impose.

AIR POST STAMPS

By DOUGLAS B. ARMSTRONG.

Swiss Military Flight

As usual, a special air postmark was applied to a small mail of letters carried by military aeroplane from Grenchen to Dubendorf on April 13. It was in use for the one day only, and consists of a double-lined circular cachet, containing the words FLUGPOST—13.IV.24—Grenchen Zurich " struck in pale blue upon ordinary and air post stamps of Switzerland.

A souvenir stamp of 30 centimes and an official post-card of 25 centimes were also issued by the organising committee.

THE Grenchen stamp appears to be on a par with the early Swiss aero stamps of 1911-12, inasmuch as it had no franking power, but merely represented a direct contribution to the funds of the meeting. Lithographed in large upright rectangular format, it depicts two aeroplanes crossing a mountain ridge, in the shelter of which nestles a typical Alpine village. The inscription on the stamp reads, " FLUGPOST GRENCHEN, April, 1924."

Originally planned for April 6, the flight had to be postponed owing to bad weather for a whole week. As it was, the pilot was unable to land at Grenchen, but was forced to go on to Olten before descending. The mail carried on this occasion consisted of 3,963 letters, 3,731 postcards and 566 pieces of printed matter, only a small proportion of which bore the souvenir stamp.

Artistic Swiss Air Stamps

A CLASSICAL figure of Icarus, soaring *ad astra* upon outspread wings, forms the very striking motif of M. Vibert's design for the new Swiss air post stamps, a proof of which we have now seen. The stamp is uniform in size and shape with the values already in use, the sole inscriptions comprising the name " HELVETIA " and the value in figures and words enclosed in two narrow oblong panels at the foot. It is far and away the most artistic design for an air post stamp that has come under our notice, and will make a very beautiful addition to the aero collection.

Uruguayan Air Stamps Obsolete

It seems that the special aero stamps introduced by the Uruguayan Post Office at the New Year in connection with the trans-River Plate air post service have already been obsolete for nearly three months, owing to the suspension of the daily flights between Montevideo and Buenos Aires. There is some talk of the remainders being destroyed, so that an early increment may be anticipated, since these stamps were never employed to any considerable extent. On genuinely flown covers they are decidedly scarce even now.

Russian Mysteries

A SET of four postage stamps in a design showing an aeroplane flying over the city of Moscow and bearing the date " 1923 " in a circle, has made a belated appearance in Russia. It consists of denominations 1 rouble brown, 3 roubles blue, 5 roubles red, and 10 roubles green. No sooner had they been issued than, with the exception of the three roubles, they were surcharged in gold currency as follows: 10 kopecs on 5 roubles, 15 kopecs on 1 rouble, and 20 kopecs on 10 roubles, in which form they are said to be available for ordinary postage. The question arises—are these air post stamps, or not?

Belfast-Liverpool Air Mail

THERE should be enough " first flight " covers of the Belfast-Liverpool air mail service to go round amongst the world's aero-collectors, if the official figures are any guide. The first regular flight took place on May 2, when a total of 1,500 letters is said to have crossed the Irish Sea by air!

Czecho-Slovakia Air Post

APROPOS of the recently-organised air post service between Prague and Paris via Strasburg and Prague and Bucharest via Vienna and Belgrade, it is stated that letters actually posted at the aerodrome (Prague) bear the special cachet " Letiste " (Flying Ground), but others have the ordinary postmarks of the offices at which they are mailed. Aerogrammes can only be recognised, therefore, when impressed with the receiving stamp of the terminal town.

Answers to Correspondents

J. M. H. (Reading).—The present market value of flown covers showing the special cancellation of the First Aerial Post, Allahabad, 1911, if in good condition, is about one guinea each.

Readers are invited to forward to the Editor of FLIGHT letters, etc., bearing aerial stamps or postmarks for mention in this column, as well as out-of-the-way varieties, etc.

We shall also be pleased to hear from correspondents interested in air-stamp collecting, and to answer any queries.

NOTICE TO AIRMEN

Low Flying over the British Empire Exhibition, Wembley

IT is notified that complaints having been received as to the prevalence of low flying by aircraft over the British Empire Exhibition at Wembley, the attention of all pilots and owners of aircraft is specially directed to Article 9 (2) (c) of the Air Navigation (Consolidation) Order, 1923, which prohibits the carrying out of any flying which, by reason of low altitude or proximity to persons or dwellings or for any other reason, is the cause of unnecessary danger to any person or property on land or water. It will be appreciated that a forced landing in the crowded grounds of the Exhibition would involve disastrous consequences both to persons and material. It is, therefore, essential that all flying over the Exhibition should take place at a proper height, and in cases of contravention of the provision of the Air Navigation (Consolidation) Order referred to above, proceedings will be instituted.

(No. 50 of 1924.)

SIDE-WIND

THE recent outbreak of fire in the office of the Anglo-American Oil Company's Birkdale Depôt, Southport, would undoubtedly have resulted in serious damage to the town had it not been for the excellent construction of the depôt, which prevented the flames reaching either the filling house or the main tanks. There were 16,000 gallons of Pratt's spirit and 12,000 gallons of paraffin in the tanks, and the company have cause to congratulate themselves on having planned and constructed their depôt in such a way that disaster was averted. The office itself was completely gutted.

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; I.C. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

APPLIED FOR IN 1923

Published June 5, 1924

- 3,665. S. HEATH. Variable-pitch propellers. (202,270.)
- 4,099. W. E. IKERMAN. Aeroplanes with multiple planes. (215,454.)
- 14,073. SOC. ANON. DES ATELIERS D'AVIATION L. BREGUET. I.C. engines. (199,015.)
- 14,186. E. A. SPERRY and H. H. THOMPSON. Gyroscopic compasses. (215,594.)
- 17,688. S. E. SAUNDERS. Hulls for flying-boats, etc. (215,626.)
- 22,387. SOC. ANON. DES ATELIERS D'AVIATION L. BREGUET. Air-screws. (203,698.)
- 25,263. APPARATE-BAUANSTALT AXMANN AND Co. and E. SCHOLL. Rotary piston-engines. (215,659.)
- 28,583. SOC. ANON. DES AEROPLANES G. VOISIN. Means for securing a gudgeon pin to a piece subjected to alternating motion. (210,401.)

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